Vol. 1024 Number 1

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

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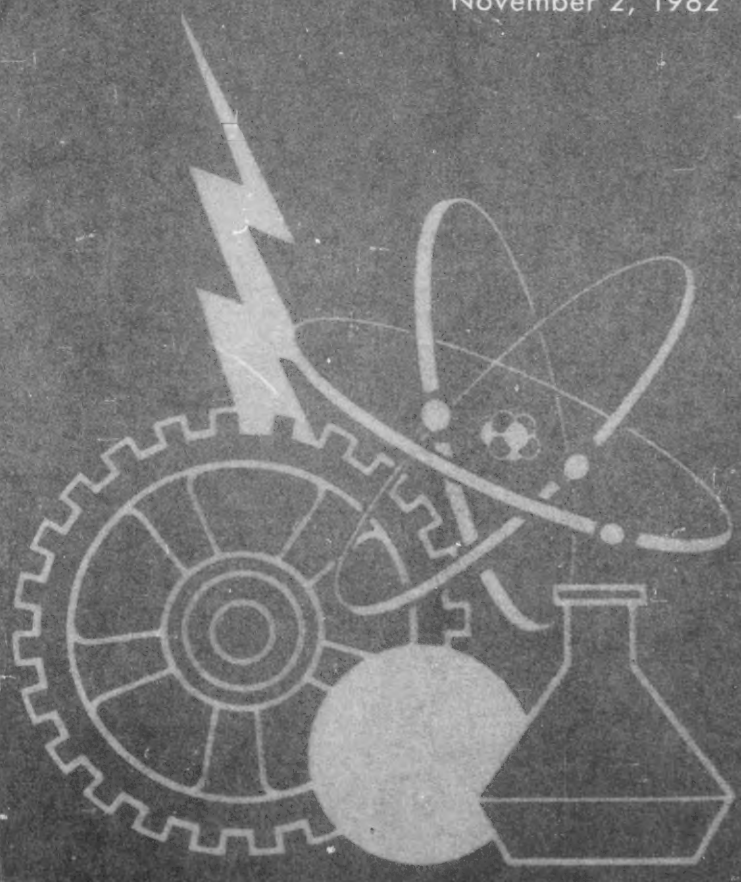
November 2, 1982



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

November 2, 1982 Volume 1024 Number 1

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1024 OG 2
Board of Appeals Decisions	1024 OG 2
Reissue Applications Filed	1024 OG 2
Request for Reexaminations Filed	1024 OG 2
Notice of Availability for Licensing	1024 OG 2
Patent Certificates of Correction	1024 OG 4
Revision of Patent Procedure	1024 OG 5
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1024 OG 39
Condition of Patent Applications	1024 OG 40
Reexaminations	1024 OG 41
Defensive Patent Publication (102,401)	1
Reissue Patents Granted (31,070)	3
Plant Patents Granted (4,910)	5
Patents Granted	
General and Mechanical (4,356,569)	7
Chemical (4,357,141)	205
Electrical (4,357,485)	301
Design Patents Granted (266,710)	383
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 41
Index of Applicants of Defensive Publications	PI 43
Classification of	
Patents (Including Reissues and Reexaminations)	PI 45
Designs, Plants and Defensive Publications	PI 47
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 48
Designs, Plants and Applicants of Defensive Publications	PI 49
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

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GENERAL INFORMATION concerning TRADEMARKS.

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Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

Board of Appeals Decisions Rendered in the Month of Sept. 1982

Affirmed	220
Affirmed in Part	22
Reversed	56
Total	298

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,207,209, Re. S.N. 386,809, Filed June 9, 1982, Cl. 252/462, SINTERED CATALYTIC OR ABSORBENT METALLIC PRODUCT AND METHOD FOR SINTERING METALLIC POWDERS, Shinpei Matsuda, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Mary Louise Beall, Ex. Gp.: 116

4,277,822, Re. S.N. 409,520, Filed Aug. 19, 1982, Cl. 362/352, KNOCKDOWN SHADE ASSEMBLY FOR LIGHTING FIXTURE, Franz K. Weber, et al., Owner of Record: *Inventors,* Attorney or Agent: Gene W. Arant, Ex. Gp.: 221

4,321,778, Re. S.N. 412,387, Filed Aug. 30, 1982, Cl. 52/397, GLASS PANES AND BUILDINGS INCLUDING GLASS PANES, Merill Whitehead, Owner of Record: *Twin View Glass, Inc., New York, N.Y.,* Attorney or Agent: James D. Fornari, Ex. Gp.: 354

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,428,735, Reexam. No. 90/000,264, Requested: Sept. 30, 1982, Cl. 424/330, METHOD OF TREATING DEPRESSION WITH 5-(3-DIMETHYLAMINOPROPYLIDENE) DIBENZO (A,D) (1,4)CYCLOHEPTADIENE OR ITS NON TOXIC SALTS THEREOF, Edward L. Engelhardt, Owner of Record: *Requester,* Attorney or Agent: Nels T. Lippert, Ex. Gp.: 120, Requester: Merck & Co., Inc., Rahway, N.J.

3,863,006, Reexam. No. 90/000,265, Requested: Sept. 29, 1982, Cl. 424/49, METHOD FOR DESENSITIZING TEETH, Milton Hodosh, Owner of Record: *Inventor,* Attorney or Agent: Kenyon & Kenyon, Ex. Gp.: 123, Requester: Milton Hodosh, Providence, R.I.

4,053,845, Reexam. No. 90/000,254, Requested: Sept. 9, 1982, Cl. 330/4.3, OPTICALLY PUMPED LASER AMPLIERS, Gordon Gould, Owner of Record: *Inventor,* Attorney or Agent: Lerner, David, Littenberg & Samuel, Ex. Gp.: 220, Requester: Bell Telephone Labs., Murray Hill, N.J.

4,218,438, Reexam. No. 90/000,258, Requested: Sept. 17, 1982, Cl. 424/115, ANTICOCCIDIAL COMBINATIONS COMPRISING NICARBAZIN AND THE POLYETHER ANTIBIOTICS, Maurice E. Callender, et al., Owner of Record: *Requester,* Attorney or Agent: Kathleen R. S. Page, Ex. Gp.: 120, Requester: Eli Lilly & Co., Indianapolis, Ind.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

SN 6-402,352. ISOELECTRIC FOCUSSING-POLYNUCLEOTIDE/POLYACRYLAMIDE GEL ELECTROPHORESIS. Dept. of Health & Human Services.

SN 6-402,353. MULTI SLAB GEL CASTING AND ELECTROPHORESIS APPARATUS. Dept. of Health & Human Services.

SN 6-396,057. NON-INVASIVE OPTICAL ASSESSMENT OF PLATELET VIABILITY. Dept. of Health & Human Services.

SN 6-338,537. INHIBITION BY PEPTIDES OF TOLERANCE TO AND PHYSICAL DEPENDENCE ON MORPHINE. Dept. of Health & Human Services.

SN 6-396,055. FIBER OPTIC PO_2 PROBE. Dept. of Health & Human Services.

SN 6-400,571. SYSTEMS FOR MONITORING CHANGES IN ELASTIC STIFFNESS IN COMPOSITE MATERIALS. Dept. of Commerce.

SN 6-308,350 (4,347,378). ANTIMICROBIAL GLYCOLIC ACID DERIVATIVES. Dept. of Agriculture.

SN 6-202,397 (4,347,647). APPARATUS FOR MAKING NO-TWIST YARN. Dept. of Agriculture.

SN 6-102,484 (4,347,938). RUNNING SKYLINE INTERMEDIATE SUPPORT AND MULTI-SPAN CARRIAGE. Dept. of Agriculture.

SN 6-196,172 (4,348,313). CONCRETE FORMULATION COMPRISING POLYMERIC REACTION PRODUCT OF SULFUR/CYCLOPENTADIENE OLIGOMER/DICYCLOPENTADIENE. Dept. of Agriculture.

SN 6-310,405 (4,348,333). B-KETOCARBOXYL AND PHOSPHONATE DIHYDRO-CHALCONE SWEETNERS. Dept. of Health & Human Services.

SN 6-202,395 (4,348,492). STARCH ADDUCT ENCASEMENT OF PARTICULATE ELASTOMERS. Dept. of Agriculture.

PATENT NOTICES

Certificates of Correction for the Week of Nov. 2, 1982

Re. 30,796	4,295,926	4,328,324	4,340,584
D. 259,495	4,296,301	4,330,548	4,340,649
3,754,556	4,299,432	4,330,574	4,341,152
3,876,138	4,302,992	4,330,862	4,341,257
3,911,923	4,303,470	4,331,696	4,341,327
3,928,417	4,308,410	4,332,205	4,341,534
4,188,324	4,309,497	4,332,470	4,341,929
4,189,199	4,311,690	4,333,002	4,343,233
4,196,132	4,313,195	4,333,605	4,343,327
4,208,523	4,313,351	4,333,780	4,343,856
4,215,033	4,315,398	4,334,298	4,344,086
4,216,297	4,316,810	4,334,509	4,344,233
4,232,086	4,318,317	4,335,382	4,344,408
4,235,901	4,318,635	4,335,853	4,345,078
4,240,135	4,318,979	4,335,941	4,345,630
4,241,770	4,319,174	4,335,985	4,345,669
4,254,120	4,319,457	4,336,091	4,345,680
4,259,902	4,320,825	4,336,101	4,345,872
4,276,410	4,323,316	4,336,213	4,346,015
4,282,640	4,323,680	4,337,371	4,346,231
4,282,703	4,323,716	4,337,533	4,346,374
4,283,489	4,324,010	4,337,777	4,346,396
4,284,722	4,325,641	4,338,459	4,347,142
4,289,761	4,325,666	4,339,107	4,348,763
4,291,314	4,326,535	4,339,771	
4,292,387	4,327,768	4,340,404	
4,293,676	4,328,183	4,340,583	

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1 & 5

[Docket No. 21001-202]

Revision of Patent Procedure

AGENCY: Patent and Trademark Office, Commerce

ACTION: Notice of proposed rulemaking.

SUMMARY: The Patent and Trademark Office proposes to amend the rules of practice in patent cases, Part 1 of 37 CFR, to implement the sections of Public Law 97-247 of 1982 which become effective on February 27, 1983, and to make other miscellaneous changes. The other miscellaneous changes are being made to clarify and improve the rules where appropriate. The rulemaking also proposes to amend Part 5 of 37 CFR to establish procedures expediting the granting of a license under 35 U.S.C. 184 permitting filing of a patent application in a foreign country and to indicate on the application filing receipt if such a license is granted. This action is necessary at this time in order that final rules may be adopted prior to February 27, 1983, the effective date of the sections of Public Law 97-247 which this proposal seeks to implement.

DATES: Comments must be submitted on or before December 16, 1982; a public hearing will be held December 16, 1982, 9:30 a.m.; requests to present oral testimony should be received on or before December 9, 1982.

ADDRESSES: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D. C. 20231. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza, located at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and a transcript of the public hearing will be available for public inspection in Room 11A13 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D. C. 20231.

SUPPLEMENTARY INFORMATION: This proposed rule change is designed primarily to 1) implement the changes in practice in the Patent and Trademark Office provided for in Public Law 97-247 enacted on August 27, 1982; 2) correct, or clarify or rewrite certain rules; and 3) to expedite the granting of licenses under 35 U.S.C. 184.

This proposal contains a number of changes in practice designed to benefit both the Office in its handling of its mission and the public the Office serves.

Certain of the proposed changes are more or less housekeeping in nature.

A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086-33112 with corrections in the printing thereof being published on August 4, 1982, at 47 FR 33688 and on August 5, 1982, at 47 FR 33959. The final rule was also published in the Official Gazette on August 10, 1982, at 1021 O.G. 19-94. A final rule relating to definitions of "independent inventor" and "nonprofit organizations" was published on September 10, 1982 at 47 FR 40134-40140. A "Revision of Patent and Trademark Fees Confirmation" was published on September 17, 1982 at 47 FR 41272-41283 upon enactment of H.R. 6260 as Public Law 97-247 on August 27, 1982. A final rule relating to the definition of "small business concern" was published on September 30, 1982 at 47 FR 43272-43276.

DISCUSSION OF SPECIFIC RULES:

Section 1.4, if amended as proposed, would add a reference to Subpart D relating to citation of prior art and reexamination.

Section 1.6, if amended as proposed, would insert "federal" before "holidays" in paragraphs 1.6(a)-(c) in accordance with §21(b) of Title 35, United States Code, as amended by Public Law 97-247. Proposed new paragraph 1.6(d) would establish in the regulations a procedure under which papers and fees which could not be filed on a particular date because of an interruption or emergency in the United States Postal Service which is so designated by the Commissioner, may be promptly filed after the ending of such a designated interruption or emergency and be considered as having been filed on that particular date. Authority for such a practice is found in §21(a) of Title 35, United States Code, as amended by Public Law 97-247.

Section 1.7, if amended as proposed, would insert "federal" before "holiday" in accordance with 35 U.S.C. 21(b), as amended by Public Law 97-247.

Section 1.8, if amended as proposed, would delete in paragraph 1.8(a) the references to §§3.55 and 4.23, which sections were deleted from the rules by the rulemaking entitled "Revision of Patent and Trademark Fees" published in the Federal Register on September 10, 1982 at 47 Fed. Reg. 40134-40140. The proposed change in paragraph 1.8(a)(i) results from the change made in §111 of Title 35, United States Code, by Public Law 97-247. Under the proposal, the certificate of mailing procedure would be available for filing oaths or declarations and filing fees. However, the certificate of mailing procedure could not be used for filing specifications and drawings to obtain a filing date. Such papers could be filed under proposed §1.10. The proposed change in paragraph 1.8(a)(viii) would recognize the establishment of the Court of Appeals for the Federal Circuit.

Section 1.10, if added as proposed, would provide a procedure for assigning the date on which any paper or fee is deposited as Express Mail with the United States Postal Service as the filing date of the paper or fee in the Patent and Trademark Office.

Authority for the Commissioner to establish such a procedure is provided in §21(a) of Title 35, United States Code, as amended by Public Law 97-247. The proposed procedure, in paragraph 1.10(a), would require the use of the "Express Mail Post Office to Addressee Service" of the United States Postal Service. This service provides for the use of a mailing label which clearly indicates the date on which it was deposited. Proposed paragraph 1.10(b) would require (1) that the number of the Express Mail mailing label be placed on each paper or fee and (2) that a certificate of express mailing, signed by the person mailing the paper or fee, accompany the paper or fee and state the date of deposit as Express Mail in the United States Postal Service. Under proposed paragraph 1.10(c), the Office would accord the paper or fee the certificate date as the filing date without further proof if the paper or fee is received in the Office on the first day the Office receives papers or fees following the certificate date. Since Express Mail provides for one day delivery, the certificate plus timely receipt one day later is considered sufficient evidence to establish the deposit date. If, however, more than one day has elapsed between the certificate date and the Office receipt date, paragraph 1.10(c) provides that the person mailing the paper or fee may be required to file (1) a copy of the Express Mail receipt showing the actual date of mailing and (2) an affidavit or declaration from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. The certificate of mailing procedure of §1.8(a) would continue to be available in addition to the proposed procedure under §1.10.

Section 1.17, paragraph (h), if amended as proposed, would delete the reference to §1.45 and add a reference to proposed §1.48 relating to the correction of inventorship in patent applications.

Section 1.22 as it currently exists is proposed to be labeled as paragraph (a) and is proposed to be amended to recognize that filing dates may be assigned without payment of the basic filing fee as authorized by §111 of Title 35, United States Code, as amended by Public Law 97-247. Proposed new paragraph 1.22(b) would indicate that fees paid to the Office should be itemized in such a manner that the purpose for which the payment is submitted can be clearly determined by Office personnel for proper processing.

Section 1.24, if amended as proposed, would delete the reference to coupons in denominations of forty cents since coupons in this denomination are no longer necessary.

Section 1.41, if amended as proposed, would require in paragraph 1.41(a) that a patent be applied for in the name of the actual inventor or inventors and that the full names of the inventors be stated. Paragraph 1.41(b), as proposed to be amended, clarifies the definition of the word "applicant". Proposed new paragraph 1.41(c) permits any person authorized by the applicant to file an application for patent in order to receive a filing date on behalf of the inventor or inventors, but the oath or declaration for the application must be made by all of the actual inventors in accordance with proposed §§1.63 and 1.64. Under proposed new

paragraph 1.41(d), a showing may be required from the person initially filing an application that the filing was authorized.

Sections 1.42 and 1.43, if amended as proposed, would remove the requirement that the legal representative sign the application papers in view of the proposed changes pursuant to 35 U.S.C. 111 as amended by Public Law 97-247. The oath or declaration must still be signed. Several occurrences of the masculine gender in §1.42 are also proposed to be deleted.

Section 1.45, if amended as proposed, would delete present paragraphs 1.45(b) and (c) in view of proposed new §1.48 and remove the requirement that joint inventors sign the application papers. The joint inventors would, however, still be required to make the oath or declaration in accordance with proposed new §§1.63 and 1.64.

Section 1.46, if amended as proposed, would permit anyone to file the application if authorized by the inventor or inventors or one of the persons mentioned in §§1.42, 1.43, or 1.47.

Section 1.47, if amended as proposed, would change the reference for the rule on oaths or declarations from §1.65 to proposed §1.63.

Section 1.48, if added as proposed, would add a new section relating to correction of inventorship as authorized by §116 of Title 35, United States Code, as amended by Public Law 97-247. Under proposed §1.48, if the correct inventor or inventors are not named in an application for patent, the application could be amended to name only the actual inventor or inventors so long as the error in the naming of the inventor or inventors occurred without any deceptive intention. Proposed §1.48 would require that the amendment be diligently made and be accompanied by (1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (2) an oath or declaration by each actual inventor or inventors as required by §1.63; (3) the fee set forth in §1.17(h); and (4) the written consent of any assignee. Correction would be permitted in cases where the person originally named as inventor was in fact not the inventor of the subject matter contained in the application. If such error occurred without any deceptive intention on the part of the true inventor, the Office would have the authority to substitute the true inventor for the erroneously named person. Although probably rarer, instances such as changes from a mistakenly identified sole inventor to different, but actual, joint inventors; conversions from erroneously identified joint inventors to different but actual, joint inventors; and conversions from erroneously identified joint inventors to a different, but actual, sole inventor would also be permitted. In each instance, however, the Office would have to be assured of the presence of innocent error, without deceptive intention on the part of the true inventor or inventors, before permitting a substitution of a true inventor's name.

Section 1.51, if amended as proposed, would change the reference in paragraph (a)(2) to new §1.63 for the requirements of an oath

or declaration and would change paragraph (b) with regard to the required time for filing material information disclosure statements.

Section 1.52, if amended as proposed, would revise paragraph 1.52(c) relating to interlineations, erasures, cancellations or other alterations in application papers to specify that such changes must be made before the signing of any accompanying oath or declaration and should be dated and initialed or signed by the applicant on the same sheet of paper. Paragraph 1.52(c), as proposed to be amended, would prohibit making alterations in the application papers after the signing of an oath or declaration referring to such application papers. Under paragraph 1.52(c), as proposed to be amended, amendments to application papers made after the signing of an oath or declaration referring to the application papers, could only be made in the manner provided by §§1.121 and 1.123-1.125.

Section 1.53, if amended as proposed, would revise the title to indicate that the section, as amended, would relate to application serial numbers, filing dates and completion of applications. Paragraph 1.53(a) as proposed, would indicate that a serial number is assigned to any application received for identification purposes, even if the application is incomplete or informal. Paragraph 1.53(b), as proposed, would provide that a filing date would be assigned an application as of the date a specification containing a description and claim and any required drawing are received in the Patent and Trademark Office. Although the filing fee and oath or declaration could be submitted later, no amendments could be made to the specification or drawings which would introduce new matter. This practice is authorized by 35 U.S.C. 111 as amended by Public Law 97-247. Proposed new paragraph 1.53(c) would provide for notifying applicant of any application incomplete because the specification or drawing is missing and giving the applicant a time period to correct any omission. If the omission is not corrected within the time period given, the application would be returned or otherwise disposed of and a handling fee of $50.00 would be retained from any refund of a filing fee. Proposed new paragraph 1.53(d) would provide that, where a filing date has been assigned to a filed specification and drawing, the applicant will be notified and be given a period of time in which to file the missing fee, oath or declaration and to pay the surcharge due. Proposed new paragraph 1.53(e) would indicate that a patent application would not be forwarded for examination on the merits until all required parts had been received. Proposed new paragraph 1.53(f) indicates that international applications filed under the Patent Cooperation Treaty which designate the United States of America are considered to have a United States filing date, except as provided in 35 U.S.C. 102(e), on the date the requirements of PCT Article 11(1)(i) to (iii) are met.

Section 1.54, if amended as proposed, would designate the existing section as paragraph (a) and add a reference to §1.53. Paragraph 1.54(b) is proposed to be added to indicate that applicant will be informed of the serial number and filing date of the application.

Section 1.55, if amended as proposed, would limit the section to claims for foreign priority by deleting paragraphs (a) and (d) and redesignating paragraphs (b) and (c) as paragraphs (a) and (b). Paragraph 1.55(a), as proposed, would change the reference from §1.65 to proposed §1.63.

Section 1.56, if amended as proposed, would revise paragraph (c) to delete reference to signing of the application but would add reference to signing of the oath or declaration pursuant to proposed §1.63. Under paragraph 1.56(c), as proposed to be amended, an application may be stricken from the files if an oath or declaration pursuant to proposed §1.63 is signed in blank, or without actual inspection of the application papers, or without the review of the specification indicated in proposed §1.63(b). Paragraph 1.56(c), as proposed to be amended, would also provide for an application to be stricken from the files if application papers filed in the Office are altered after the signing of an oath or declaration pursuant to proposed §1.63 referring to those application papers.

Section 1.57 is proposed to be deleted since the requirements relating to applicant's signature to the oath or declaration of the application are adequately covered in other sections.

Section 1.59, if amended as proposed, would be rewritten to refer to and conform with the changes proposed in §1.53.

Section 1.60, if amended as proposed, would require the applicant to supply a verified copy of the originally signed application in all cases where the §1.60 filing procedure is used. The Office would no longer prepare copies without charge under the proposal. The Office, by a separate final rule, is adopting a new §1.62 to provide for the filing of a file wrapper continuing application which will eliminate the need for the Office to continue to prepare copies under §1.60.

Section 1.63, if added as proposed, would add a section replacing current §1.65 relating to the required content and execution of an oath or declaration filed as a part of a patent application. Proposed paragraph 1.63(a) provides that the oath or declaration, (1) be executed in accordance with §1.66 or §1.68, (2) identify the specification to which it is directed in some definite manner such as giving the title of the invention or serial number of the application, if previously filed, (3) identify each inventor and his or her residence and country of citizenship, and (4) state whether the inventor is a sole or joint inventor of the claimed invention. Proposed paragraph 1.63(b) would further require the oath or declaration to state that the person signing the oath or declaration (1) has reviewed and understands the contents of the identified specification, (2) believes the named inventor is the original and first inventor, and (3) acknowledges the duty to disclose information which is material. Proposed paragraph (c) would require that any application in which a claim for foreign priority is made identify in the oath or declaration the first filed foreign application. Proposed paragraph 1.63(d) would require that the oath or declaration in a continuation-in-part application, which discloses and claims subject matter in addition to that disclosed in the prior copending application,

state that the person making the oath or declaration acknowledges the duty to disclose material information (including any foreign patenting, publication, or public use or sale in the United States of the subject matter of the prior application which occurred more than one year prior to the filing date of the continuation-in-part application).

Section 1.64 is proposed to be added to clearly indicate who must sign the oath or declaration of a patent application.

Section 1.65 is proposed to be deleted because the oath or declaration requirements set forth therein are covered by proposed §1.63.

Section 1.67, if amended as proposed, would delete all of present paragraphs (a) and (b) and substitute therefor new wording. Proposed paragraph 1.67(a) would indicate that a supplemental oath or declaration meeting the requirements of proposed §1.63 may be required to correct deficiencies or inaccuracies present in an earlier oath or declaration. Proposed paragraph 1.67(b) would require a supplemental oath or declaration to be filed (1) when a claim is presented embracing material not originally claimed and (2) when a subsequently filed oath or declaration under proposed §1.53(d) refers to an amendment which includes improper new matter. Proposed paragraph 1.67(b) would also clearly state the prohibition against entry of new matter after the filing date of the application.

Section 1.69, paragraph (b), if amended as proposed, would change the time at which a translation of a non-English language oath or declaration which has not been supplied by the Office must be filed. The current time period of two months after the filing date would be changed to two months after notification that a translation is required. The reference to §1.65 in paragraph 1.69(b), as proposed to be amended, would be changed to proposed §1.63.

Section 1.70, if amended as proposed, would merely refer to proposed §1.63 for the requirements to be met when an oath or declaration is filed under 35 U.S.C. 371(c)(4).

Section 1.77, if amended as proposed, would change paragraphs (h) and (i) to refer to the abstract of the disclosure and signed oath or declaration, respectively.

Section 1.97, if amended as proposed, would change the title from "prior art statement" to "material information disclosure statement". This proposed change is appropriate since the designation "material information disclosure statement" more accurately characterizes the nature and content of the information required to be disclosed to the Patent and Trademark Office pursuant to §1.56. Section 1.97, if amended as proposed, would also provide additional time for filing a material information disclosure statement if the filing receipt has not been received within three months of the filing date. If the filing receipt is not received within three months of the filing date, the disclosure statement should be submitted within two months after receiving the filing receipt.

Section 1.98, if amended as proposed, would indicate that material information disclosure statements should list prior art with all of the information which is required to print such citations on the front page of a patent.

Section 1.99, if amended as proposed, would change the title to be consistent with the proposed amendment to §1.97.

Section 1.101, if amended as proposed, would specifically indicate that applications which are to have their examination advanced pursuant to §1.102 will be taken up for examination out of order by the examiner.

Section 1.118, if amended as proposed, would designate the existing section as paragraph (a) and amend it to clearly state that no new matter may be introduced into an application and to make specific reference to proposed §§1.53, 1.63 and 1.67. Proposed new paragraph 1.118(b) would indicate how improper amendments which introduce new matter in the specification or claims will be handled by the examiner.

Section 1.123, if amended as proposed, would require all corrections to drawings to be made by bonded draftsmen at applicant's expense since the Office does not have sufficient draftsmen to make such corrections. Sketches of any desired corrections would, however, still require approval of the examiner.

Section 1.125, if amended as proposed, would relax the prohibition against substitute specifications which are not required by the examiner. The proposed section would, however, add the requirement that any substitute specification filed must be accompanied by a statement that the substitute specification includes no new matter. Under the proposed section the statement must be a verified statement if made by a person not registered to practice before the Office.

Section 1.131, if amended as proposed, would specifically refer to the use of affidavits or declarations under the section during reexamination of a patent. Under the section as proposed to be amended, the same person or persons who would make the affidavit or declaration in an application would be required to make the affidavit or declaration on behalf of the owner of the patent under reexamination.

Section 1.132, if amended as proposed, would specifically refer to the use of affidavits or declarations under the section during reexamination of a patent.

Section 1.137, if amended as proposed in paragraph (b), would except from the provisions of paragraph (b) those applications abandoned pursuant to proposed §1.53(d) because the fee, oath, or declaration and the surcharge were not submitted. Section 111 of Title 35, United States Code, as amended by Public Law 97-247, requires that any delay in submission of the fee and oath be shown to be unavoidable. Thus, paragraph (b) of §1.137 is inapplicable to the revival of applications which become abandoned pursuant to proposed §1.53(d).

Section 1.141, if amended as proposed, would revise the rule to more clearly define what inventions are considered to be separate inventions for purposes of requiring restriction. The changes would provide in the rules the criteria which has been used in the past and is currently being used to determine if claims to different categories of invention (i.e., product, process, method of making, method of use) are directed to a single inventive concept.

Section 1.153, if amended as proposed, would change the reference for oath and declaration requirements from §1.65 to proposed §1.63.

Section 1.154, if amended as proposed, would revise paragraph (e) to refer to the signed oath or declaration requirements of §1.153(b).

Section 1.162, if amended as proposed, would change the reference from current §1.65 to proposed §1.63.

Section 1.163, if amended as proposed, would change the wording of the section to clearly indicate that a signed oath or declaration is required rather than a signed specification.

Section 1.172, if amended as proposed, would clearly indicate that the reissue oath is signed and sworn to rather than the reissue application.

Section 1.174, if amended as proposed, would remove the requirement that photoprints of original drawings be securely mounted or pasted on sheets of drawing board because paper drawings are acceptable.

Section 1.175, if amended as proposed, would change the reference to the oath or declaration from §1.65 to proposed §1.63.

Sections 1.301, 1.302 and 1.303, if amended as proposed, would refer to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals.

Section 1.324, if amended as proposed, would include wording similar to that in proposed §1.48 for correction of inventorship in applications.

Section 1.325, if amended as proposed, would include reference to the reexamination procedure.

Section 1.335, if added as proposed, would provide a new section relating to the filing in the Patent and Trademark Office of notices of arbitration awards. Such filing is required under §294 of Title 35, United States Code, as added by Public Law 97-247.

Section 1.565, if amended as proposed, would add a paragraph (e) indicating that a patent owner who has a claim rejected on a United States patent which claims the same invention must file a reissue application, if appropriate, in order to seek an interference pursuant to §1.205. The rejection cannot be

overcome by an affidavit or declaration pursuant to §1.131. Proposed paragraph 1.565(e) also provides that the failure or refusal of the patent owner to file a reissue application in such circumstances shall be taken as a disclaimer of the invention covered by the claim under rejection and will result in cancellation of the claim in the reexamination certificate issued pursuant to 35 U.S.C. 307 and §1.570.

Section 5.12, if amended as proposed, would separate the section into two paragraphs. Proposed paragraph (a) would provide that the filing of an application for an invention made in the United States would be considered to include a petition for a license for foreign filing. If a license is granted, it will be indicated on the filing receipt. If it is not granted, no indication of the denial will appear. Failure to grant a license should be considered a denial of a first petition for a license. A subsequent petition may be filed under §5.12(b). Section 5.12(b) is essentially the text of §5.12 in its present form. No rights to file a petition for license are being removed.

Environmental, energy, and other considerations: The proposed rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act. (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et. seq.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. Public Law 96-517 and 97-247 have both taken into consideration the impact they may have on small entities. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et. seq., since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to requests for extensions of time, will be reduced.

List of Subjects in 37 CFR Parts 1 and 5

Administrative practice and procedure, Courts, Inventions and patents.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and Public Law 97-247, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below.

It is proposed to amend 37 CFR, Parts 1 and 5, as follows with deletions indicated by brackets and additions by arrows.

1. Section 1.4 is proposed to be amended by revising paragraph (a) to read as follows:

§1.4 Nature of correspondence.

(a) Correspondence with the Patent and Trademark Office comprises: (1) correspondence relating to services and facilities of the Office, such as general inquiries, requests for publications supplied by the Office, orders for printed copies of patents or trademark registrations, orders for copies of records, transmission of assignments for recording, and the like, and (2) correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§1.31 to 1.352; of international applications in Subpart C, §§1.401 to 1.482; ▶ of reexamination of patents in Subpart D, §§1.501 to 1.570; ◀ and of [Trademark] ▶ trademark ◀ applications §§2.11 to 2.189.

* * * * *

2. Section 1.6 is proposed to be revised to read as follows:

§1.6 Receipt of letters and papers.

(a) Letters and other papers received in the Patent and Trademark Office are stamped with the date of receipt. No papers are received in the Patent and Trademark Office on Saturdays, Sundays or ▶ federal ◀ holidays within the District of Columbia.

(b) Mail placed in the Patent and Trademark Office pouch up to midnight on weekdays, excepting Saturdays and ▶ federal ◀ holidays, by the post office at Washington, D. C., serving the Patent and Trademark Office is considered as having been received in the Patent and Trademark Office on the day it was so placed in the pouch.

(c) In addition to being mailed or delivered by hand during office hours, letters and other papers may be deposited up to midnight in a box provided at the guard's desk at the lobby of building 3 of the Patent and Trademark Office at Crystal Plaza, Arlington, Virginia and at the main entrance ▶ (14th Street) ◀ of the Department of Commerce Building, Washington, D. C., on weekdays except Saturdays and ▶ federal ◀ holidays, and all papers deposited therein are considered as received in the Patent and Trademark Office on the day of deposit.

▶ (d) If interruptions or emergencies in the United States Postal Service which have been so designated by the Commissioner occur, the Patent and Trademark Office will consider as filed on a particular date in the Office any paper or fee which is (1) promptly filed after the ending of the designated interruption or emergency and (2) accompanied by a statement indicating that such paper or fee would have been filed on that particular date if it were not for the designated interruption or emergency in the Postal Service. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. ◀

3. Section 1.7 is proposed to be revised to read as follows:

§1.7 Times for taking action: Expiration on Saturday, Sunday or ▶ federal ◀ holiday.

Whenever periods of time are specified in this part in days, calendar days are intended. When the day, or the last day fixed by statute or by or under this part for taking any action or paying any fee in the Patent and Trademark Office falls on Saturday, Sunday, or on a ▶ federal ◀ holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding day which is not a Saturday, Sunday, or a ▶ federal ◀ holiday. See §1.304 for time for appeal or for commencing civil action.

4. Section 1.8 is proposed to be amended by revising paragraph (a) to read as follows:

§1.8 Certificate of mailing.

(a) Except in the cases enumerated below, papers and fees required to be filed in the Patent and Trademark Office within a set period of time will be considered as being timely filed if: (1) they are addressed to the Commissioner of Patents and Trademarks, Washington, D. C. 20231, and deposited with the U.S. Postal Service with sufficient postage as first class mail prior to expiration of the set period, and (2) they are accompanied by a certificate stating the date of deposit [(see forms, §§3.55 and 4.23)]. The person signing the certificate should have reasonable basis to expect that the correspondence would be mailed on or before the date indicated[, the] ▶ . The ◀ actual date of receipt of the paper or fee will be used for all other purposes. This procedure does not apply to the following:

(i) The filing of ▶ a ◀ national ▶ application specification and drawing or other papers for the purpose of obtaining an application filing date; ◀ [applications for patents;]

* * *

(viii) The filing of a notice of election to proceed by civil action in an inter partes proceeding under 35 U.S.C. 141 or section 21(a)(1) of the Trademark Act, 15 U.S.C. 1071(a)(1), in response to another party's appeal to the ▶ Court of Appeals for the Federal Circuit ◀ [Court of Customs and Patent Appeals];

* * * * *

5. A new section 1.10 is proposed to be added to read as follows:

▶ §1.10 Filing of papers and fees by Express Mail with certificate.

(a) Any paper or fee to be filed in the Patent and Trademark Office can be filed utilizing the Express Mail Post Office to Addressee Service of the United States Postal Service and be considered as having been filed in the Office on the date the paper or fee is shown to have been deposited as Express Mail with the United States Postal Service.

(b) Any paper or fee filed by Express Mail must have the number of the Express Mail mailing label placed thereon prior to mailing, be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and must be accompanied by a certificate of express mailing which states the date of express mailing and is signed by the person mailing the paper or fee.

(c) The Office will accept the certificate of express mailing and accord the paper or fee the certificate date under 35 U.S.C. 21(a) without further proof of the date on which the express mailing occurred if the paper or fee is received in the Office on the first day the Office receives papers or fees following the certificate date. If more than one day has elapsed between the certificate date and the Office receipt date the person mailing the paper or fee may be required to file a copy of the Express Mail receipt showing the actual date of mailing and an affidavit or declaration from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. ◀

6. Section 1.17 is proposed to be amended by revising paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * *

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph--$120.00

[--§1.45--for correction of inventorship]
--§1.47--for filing by other than all the inventors or a person not the inventor
▶ --§1.48--for correction of inventorship ◀
--§1.182-for decision on questions not specifically provided for
--§1.183-to suspend the rules
--§1.268-for late filing of interference settlement agreement

* * * * *

7. Section 1.22 is proposed to be revised to read as follows:

§1.22 Fees payable in advance.

▶(a)◀ Fees and charges payable to the Patent and Trademark Office are required to be paid in advance, that is, at the time of [making application for] ▶requesting◀ any action by the Office for which a fee or charge is payable ▶with the exception that under §1.53 applications for patent may be assigned a filing date without payment of the basic filing fee◀.

▶(b) All fees paid to the Patent and Trademark Office should be itemized in each individual application, patent or other proceeding in such a manner that it is clear for which purpose the fees are paid.◀

8. Section 1.24 is proposed to be revised to read as follows:

§1.24 Coupons.

Coupons in denominations of [forty cents and] one dollar are sold by the Patent and Trademark Office for the convenience of regular purchasers of U.S. patents and trademark registrations; these coupons may not be used for any other purpose. [The 40-cent coupons are sold individually and in books of 50 with stubs for record for $20.] The one dollar coupons are sold individually and in books of 50 with stubs for record for $50. These coupons are good until used; they may be transferred but cannot be redeemed.

9. Section 1.41 is proposed to be revised to read as follows:

§1.41 Applicant for patent.

(a) A patent must be applied for ▶in the name of the actual inventor or inventors. Full names must be stated, including the family name and at least one given name without abbreviation together with any other given name or initial.◀ [and the application papers must be signed and the necessary oath or declaration executed by the actual inventor in all cases, except as provided by §§1.42, 1.43, and 1.47. (See §1.60)]

(b) Unless the contrary is indicated the word "applicant" when used in these sections refers to the inventor[,] ▶or◀ joint inventors who ▶are applying◀ [have applied] for a patent, or to the person mentioned in §§1.42, 1.43, or 1.47 who ▶is applying◀ [has applied] for a patent in place of the inventor.

▶(c) Any person authorized by the applicant may file an application for patent on behalf of the inventor or inventors, but an oath or declaration for the application (§1.63) can only be made in accordance with §1.64.◀

▶(d) A showing may be required from the person filing the application that the filing was authorized where such authorization comes into question.◀

10. Section 1.42 is proposed to be revised to read as follows:

§1.42 When the inventor is dead.

In case of the death of the inventor, the legal representative (executor, administrator, etc.) of the deceased inventor may [sign the application papers and] make the necessary oath or declaration, and apply for and obtain the patent. Where the inventor dies during the time intervening between the filing of [his] ▶ the ◀ application and the granting of a patent thereon, the letters patent may be issued to the legal representative upon proper intervention [by him].

11. Section 1.43 is proposed to be revised to read as follows:

§1.43 When the inventor is insane or legally incapacitated.

In case an inventor is insane or otherwise legally incapacitated, the legal representative (guardian, conservator, etc.) of such inventor may [sign the application papers and] make the necessary oath or declaration, and apply for and obtain the patent.

12. Section 1.45 is proposed to be amended by deleting paragraphs (b) and (c) and the designation (a) to the first paragraph to read as follows:

§1.45 Joint inventors.

[(a)] Joint inventors must apply for a patent jointly and each must [sign the application papers and] make the required oath or declaration: neither of them alone, nor less than the entire number, can apply for a patent for an invention invented by them jointly, except as provided in §1.47.

[(b) If an application for patent has been made through error and without any deceptive intention by two or more persons as joint inventors when they were not in fact joint inventors, the application may be amended to remove the names of those not inventors upon filing of a petition including a statement of the facts verified by all of the original applicants, the required fee (§1.17(h)), and an oath or declaration as required by §1.65 by the applicant who is the actual inventor, provided the amendment is diligently made. Such amendment must have the written consent of any assignee.]

[(c) If an application for patent has been made through error and without any deceptive intention by less than all the actual joint inventors, the application may be amended to include all the joint inventors upon filing of a petition including a statement of the facts verified by, and an oath or declaration as required by §1.65 executed by all the actual joint inventors, along with the required fee (§1.17(h)), provided the amendment is diligently made. Such amendment must have the written consent of any assignee.]

13. Section 1.46 is proposed to be revised to read as follows:

§1.46 Assigned inventions and patents.

In case the whole or a part interest in the invention or in the patent to be issued is assigned, the application must still be made ▶ or authorized to be made and an oath or declaration signed ◀

by the inventor or one of the persons mentioned in §§1.42, 1.43, or 1.47. However, the patent may be issued to the assignee or jointly to the inventor and the assignee as provided in §1.334.

14. Section 1.47 is proposed to be revised to read as follows:

§1.47 Filing when an inventor refuses to sign or cannot be reached.

(a) If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself or herself and the omitted inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and by the required fee (§1.17(h)) and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the application to the omitted inventor at said address. Should such notice be returned to the Office undelivered, or should the address of the omitted inventor be unknown, notice of the filing of the application shall be published in the Official Gazette. The omitted inventor may subsequently join in the application on filing an oath or declaration of the character required by §[1.65] ▶ 1.63 ◀. A patent may be granted to the inventor making the application, upon a showing satisfactory to the Commissioner, subject to the same rights which the omitted inventor would have had if he or she had been joined.

(b) Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may make application for patent on behalf of and as agent for the inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and by the required fee (§1.17(h)) and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application. Should such notice be returned to the Office undelivered, or should the address of the inventor be unknown, notice of the filing of the application shall be published in the Official Gazette. The inventor may subsequently join in the application on filing an oath or declaration of the character required by §[1.65] ▶ 1.63 ◀. A patent may be granted to the inventor upon a showing satisfactory to the Commissioner.

15. A new section 1.48 is proposed to be added to read as follows:

▶ §1.48 Correction of inventorship.

If the correct inventor or inventors are not named in an application for patent through error without any deceptive intention, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by (1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (2) an oath or declaration by each actual inventor or inventors as required by §1.63; (3) the fee set forth in §1.17(h); and (4) the written consent of any assignee. ◀

16. Section 1.51 is proposed to be amended by revising paragraphs 1.51(a)(2) and (b) to read as follows:

§1.51 General requisites of an application.

(a) * * *

(2) An oath or declaration, see §§[1.65] ▶ 1.63 ◀ and 1.68.

* * * * *

(b) Applicants are encouraged to file a [prior art] ▶ material information disclosure ◀ statement [at the time of filing the application or within three months thereafter]. See §§1.97 through 1.99.

17. Section 1.52 is proposed to be amended by revising paragraph (c) to read as follows:

§1.52 Language, paper, writing, margins.

* * * * *

(c) Any interlineation, erasure, [or] cancellation or other alteration of the application papers [as] filed must ▶ be ◀ [have been] made before the ▶ signing of any accompanying oath or declaration pursuant to §1.63 referring to those application papers and should be dated and initialed or signed by the applicant on the same sheet of paper. No such alterations in the application papers are permissible after the signing of an oath or declaration referring to those application papers (§1.56(c)). After the signing of the oath or declaration referring to the application papers amendments may only be made in the manner provided by §§1.121 and 1.123-1.125. ◀ [application was signed and sworn to or declaration made, and should be dated and initialed or signed by the applicant in a marginal note or footnote on the same sheet of paper to indicate such fact. No such alterations are permissible after execution of the application papers. (See §1.56.)]

* * * * *

18. Section 1.53 is proposed to be revised to read as follows:

§1.53 ▶ Serial number, filing date, and completion of application ◀ [Application accepted and filed for examination only when complete].

(a) ▶ Any application for a patent received in the Patent and Trademark Office will be assigned a serial number for identification purposes ◀ [An application for a patent will not be accepted and placed upon the files for examination until all its required parts, complying with the rules relating thereto, are received, except that certain minor informalities may be waived subject to subsequent correction whenever required].

(b) ▶ The filing date of an application for patent is the date on which (1) a specification containing a description pursuant to §1.71 and at least one claim pursuant to §1.75, and (2) any drawing required by §1.81(a), are received in the Patent and Trademark Office. No new matter may be introduced into an application after its filing date (§1.118). ◀ [If the papers and parts are incomplete, or so defective that they cannot be accepted as a complete application for examination, the applicant will be notified; the papers will be held six months for completion and, if not by then completed, will thereafter be returned or otherwise disposed of; the fee, if submitted, will be refunded.]

▶ (c) If any application is received without the specification or drawing required by paragraph (b) of this section, applicant will be so notified and given a time period within which to submit the omitted specification or drawing in order to obtain a filing date as of the date of receipt of such submission. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less a $50.00 handling fee. ◀

▶ (d) If an application which has been accorded a filing date pursuant to paragraph (b) of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section. ◀

▶ (e) An application for a patent will not be placed upon the files for examination until all its required parts, complying with the rules relating thereto, are received, except that certain minor informalities may be waived subject to subsequent correction whenever required. ◀

▶ (f) The filing date of an international application designating the United States of America shall be treated as the filing date in the United States of America under PCT Article 11(3), except as provided in 35 U.S.C. 102(e). ◀

19. Section 1.54 is proposed to be revised to read as follows:

§1.54 Parts of application to be filed together ▶ ; filing receipt ◀ .

▶ (a) ◀ It is desirable that all parts of the complete application be deposited in the Office together; otherwise a letter must accompany each part, accurately and clearly connecting it with the other parts of the application. ▶ See §1.53 with regard to completion of an application. ◀

▶ (b) Applicant will be informed of the application serial number and filing date by a filing receipt. ◀

20. Section 1.55 is proposed to be revised to read as follows:

§1.55 ▶ Claim for foreign priority ◀ [Serial number and filing date of application].

[(a) Complete applications are numbered in regular order, and the applicant will be informed of the serial number and filing date of the application by a filing receipt. The filing date of the application is the date on which the complete application, acceptable for placing on the files for examination is received in the Patent and Trademark Office; or the date on which the last part completing such application is received in the case of an incomplete or defective application completed within six months.]

[(b)] ▶ (a) ◀ An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by [§1.65] ▶ §1.63 ◀ . The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. 119 must be filed in the case of interference (§1.224); when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner; and in all other cases they must be filed not later than the date the issue fee is paid. If the papers filed are not in the English language, a translation need not be filed except in the three particular instances specified in the preceding sentence, in which event a sworn translation or a translation certified as accurate by a sworn or official translator must be filed. If the priority papers are submitted after the date the issue fee is paid, they must be accompanied by a petition requesting their entry and the fee set forth in §1.17(i).

[(c)] ▶ (b) ◀ An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his attorney or agent, when submitting a claim for such right as specified in paragraph (b) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he ▶ or she ◀ has

satisfied himself ▶or herself◀ that to the best of his ▶ or her ◀ knowledge the applicant, when filing his ▶ or her ◀ application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

[(d) The filing date of an international application designating the United States of America shall be treated as the filing date in the United States of America under PCT Article 11(3), except as provided in 35 U.S.C. 102(e).]

21. Section 1.56 is proposed to be amended by revising paragraph (c) to read as follows:

§1.56 Duty of disclosure; striking of applications.

* * * * *

(c) Any application may be stricken from the files if: (1) [Signed or sworn to] ▶ An oath or declaration pursuant to §1.63 is signed ◀ in blank, or without actual inspection ▶ and review ◀ by the applicant ▶ as required by §1.63(b) ◀ ; or (2) ▶ If application papers filed in the Office are altered ◀ [Altered or partly filled in] after ▶ the signing of an oath or declaration pursuant to §1.63 referring to those application papers ◀ [being signed or sworn to].

* * * * *

22. Section 1.57 is proposed to be removed.

[§1.57 Signature.

(a) The application must be signed by the applicant in person. The signature to the oath or declaration under §1.65 will be accepted as the signature to the application provided the oath or declaration under §1.65 is attached to and refers to the specification and claims to which it applies. Otherwise the signature must appear at the end of the specification after the claims.

(b) The signature to the oath or declaration under §1.70 will be accepted as the signature to the application provided the oath or declaration under §1.70 specifically refers to the specification and claims to which it applies.

(c) Full names must be given, including at least one given name without abbreviation together with any other given name or initial.]

23. Section 1.59 is proposed to be revised to read as follows:

§1.59 Papers of [complete] application ▶ with filing date ◀ not to be returned.

Papers in [a complete] ▶ an ◀ application ▶ which has received a filing date pursuant to §1.53 ◀ [, including the drawings,] will

not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost.

24. Section §1.60 is proposed to be revised to read as follows:

§1.60 ▶ Continuation or divisional ◀ [Continuing] application for invention disclosed and claimed in a prior application.

A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application. If the application papers comprise a copy of the prior application as filed, signing and execution by the applicant may be omitted provided the copy [either] is [prepared and certified by the Patent and Trademark Office or is prepared] ▶ supplied ◀ by the applicant and verified by an affidavit or declaration by the applicant,▶ or ◀ his ▶ or her ◀ attorney or agent, stating that it is a true copy of the prior application as filed. [Certification may be omitted if the copy is prepared by and does not leave the custody of the Patent and Trademark Office.] Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date.

25. A new section 1.63 is proposed to be added to read as follows:

▶ §1.63 Oath or declaration.

(a) An oath or declaration filed under §1.51(a)(2) as a part of an application must

(1) be executed in accordance with either §1.66 or §1.68;

(2) identify the specification to which it is directed;

(3) identify each inventor and the residence and country of citizenship of each inventor; and

(4) state whether the inventor is a sole or joint inventor of the invention claimed.

(b) In addition to meeting the requirements of paragraph (a) the oath or declaration must state that the person making the oath or declaration

(1) has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration;

(2) believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought; and

(3) acknowledges the duty to disclose information which is material to the examination of the application in accordance with §1.56(a).

(c) In addition to meeting the requirements of paragraphs (a) and (b) of this section, the oath or declaration in any application in which a claim for foreign priority is made pursuant to §1.55 must identify the first filed foreign application for patent or inventor's certificate by specifying the application number, country, day, month and year of its filing.

(d) In any continuation-in-part application filed under the conditions specified in 35 U.S.C. 120 which discloses and claims subject matter in addition to that disclosed in the prior copending application, the oath or declaration must also state that the person making the oath or declaration acknowledges the duty to disclose material information (including any foreign patenting, publication, or public use or sale in the United States of the subject matter of the prior application which occurred more than one year prior to the national or PCT international filing date of the continuation-in-part application).◀

26. A new section 1.64 is proposed to be added to read as follows:

▶ §1.64 Person making oath or declaration.

(a) The oath or declaration must be made by all of the actual inventors except as provided for in §§1.42, 1.43, or 1.47.

(b) If the person making the oath or declaration is not the inventor (§§1.42, 1.43, or 1.47), the oath or declaration shall state the relationship of the person to the inventor and, upon information and belief, the facts which the inventor is required to state.◀

27. Section 1.65 is proposed to be removed.

[§1.65 Oath or declaration.

(a)(1) The applicant, if the inventor, must state that he verily believes himself to be the original and first inventor or discoverer of the process, machine, manufacture, composition of matter, or improvement thereof, for which he solicits a patent; that he does not know and does not believe that the same was ever known or used in the United States before his invention or discovery thereof, and shall state of what country he is a citizen and where he resides and whether he is a sole or joint inventor of the invention claimed in his application. In every original application the applicant must distinctly state that to the best of his knowledge and belief the invention has not been in public use or on sale in the United States more than one year prior to his application or patented or described in any printed publication in any country before his invention or more than one year prior to his application, or patented or made the subject of an inventor's certificate in any foreign country prior to the

date of his application on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in this country. He must acknowledge a duty to disclose information he is aware of which is material to the examination of the application. He shall state whether or not any application for patent or inventor's certificate on the same invention has been filed in any foreign country, either by himself, or his legal representatives or assigns. If any such application has been filed, the applicant shall name the country in which the earliest such application was filed, and shall give the day, month, and year of its filing; he shall also identify by country and by day, month, and year of filing, every such foreign application filed more than twelve months before the filing of the application in this country.

(2) This statement (i) must be subscribed to by the applicant, and (ii) must either (a) be sworn to (or affirmed) as provided in §1.66, or (b) include the personal declaration of the applicant as prescribed in §1.68. See §1.153 for design cases and §1.162 for plant cases.

(b) If the application is made as provided in §§1.42, 1.43, or 1.47, the applicant shall state his relationship to the inventor and, upon information and belief, the facts which the inventor is required by this section to state.

(c) An additional statement may be required if the application has not been filed in the Patent and Trademark Office within a reasonable time after execution of the original statement.]

28. Section 1.67 is proposed to be revised to read as follows:

§1.67 Supplemental oath or declaration [for matter not originally claimed].

(a) ▶ A supplemental oath or declaration meeting the requirements of §1.63 may be required to be filed to correct any deficiencies or inaccuracies present in an earlier filed oath or declaration. ◀ [When an applicant presents a claim for matter originally shown or described but not substantially embraced in the statement of invention or claim originally presented, he shall file a supplemental oath or declaration to the effect that the subject matter of the proposed amendment was part of his invention: That he does not know and does not believe that the same was ever known or used in the United States before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than one year before his application, or in public use or on sale in the United States for more than one year before the date of his application, that said invention has not been patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application in this country on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in the United States, and has not been abandoned. Such supplemental oath or declaration should accompany and properly identify the proposed amendment, otherwise the proposed amendment may be refused consideration.]

(b) ▶ A supplemental oath or declaration meeting the requirements of §1.63 must be filed (1) when a claim is presented for matter originally shown or described but not substantially embraced in the statement of invention or claims originally presented, and (2) when an oath or declaration submitted in accordance with §1.53(d) after the filing of the specification and any required drawings specifically and improperly refers to an amendment which includes new matter. No new matter may be introduced into an application after its filing date even if a supplemental oath or declaration is filed (§1.53(b); §1.118).◀ In proper cases the oath or declaration here required may be made on information and belief by an applicant other than inventor.

29. Section 1.69 is proposed to be amended by revising paragraph (b) to read as follows:

§1.69 Foreign language oaths and declarations.

* * * * *

(b) Unless the text of any oath or declaration in a language other than English is a form provided or approved by the Patent and Trademark Office, it must be accompanied by a verified English translation, except that in the case of an oath or declaration filed under [§1.65] ▶ §1.63◀, the translation may be filed in the Office no later than two months [after the filing date] ▶ from the date applicant is notified to file the translation◀.

30. Section 1.70 is proposed to be amended by revising paragraph (a) to read as follows:

§1.70 Content of oath or declaration [relating to content of and amendment to an application] under 35 U.S.C. 371(c)(4).

(a)[(1)] When an applicant of an international application, if the inventor, desires to enter the national stage under 35 U.S.C. 371, he or she must ▶ file an oath or declaration in accordance with §1.63 ◀ [specifically identify the international application and any amendments thereto and state that he or she has reviewed the referred to application and any amendments, and that he or she verily believes himself or herself to be the original and first inventor or discoverer of the process, machine, manufacturer, composition of matter, or improvement thereof, for which he or she solicits a patent; that he or she does not know and does not believe that the same was ever known or used in the United States of America before his or her invention or discovery thereof, and shall state of what country he or she is a citizen and where he or she resides and whether he or she is a sole or joint inventor of the invention claimed in his or her international application as filed or as amended. In every application the applicant must distinctly state that to the best of his or her knowledge and belief the invention has not been in public use or on sale in the United States of America more than one year prior to his or her international application, or patented or described in any printed publication in any country before his or her invention or more than one year prior to his or her international application, or patented or made the subject of

an inventor's certificate in any foreign country prior to the date of his or her international application on an application filed by himself or herself or his or her legal representatives or assigns more than twelve months prior to his or her international application. He or she must acknowledge a duty to disclose information he or she is aware of which is material to the examination of the application. He or she shall state whether or not any application for patent or inventor's certificate on the same invention has been filed in any foreign country, either by himself or herself, or by his or her legal representatives or assigns. If any such application has been filed, the applicant shall name the country in which the earliest such application was filed, and shall give the day, month, and year of its filing; he or she shall also identify by country and by day, month, and year of filing, every such foreign application filed more than twelve months before the filing of the international application].

[(2) This statement (i) must be subscribed to by the applicant, and (ii) must either (a) be sworn to (or affirmed) as provided in §1.66, or (b) include the personal declaration of the applicant as prescribed in §1.68.]

* * * * *

31. Section 1.77 is proposed to be amended by revising paragraphs (h) and (i) to read as follows:

§1.77 Arrangement of application elements.

The elements of the application should appear in the following order:

* * * * *

(h) [Signature. (See §1.57)] ▶ Abstract of the disclosure. ◀
(i) [Abstract of the disclosure.] ▶ Signed oath or declaration. ◀

* * * * *

32. Section 1.97 is proposed to be revised to read as follows:

§1.97 Filing of ▶ material information disclosure ◀ [prior art] statement.

(a) As a means of complying with the duty of disclosure set forth in §1.56, applicants are encouraged to file a ▶ material information disclosure ◀[prior art] statement at the time of filing the application or within three months thereafter ▶ if the filing receipt has been received. If the filing receipt has not been received within three months after the time of filing, the disclosure statement should be submitted within two months after receiving the filing receipt. If filed separately, the disclosure statement should include the Group Art Unit to which the application is assigned as indicated on the filing receipt ◀. The statement may either be separate from the specification or may be incorporated therein.

(b) The statement shall serve as a representation that the ▶ material information ◀ [prior art] listed therein includes, in the opinion of the person filing it, ▶ all of the material information ◀ [the closest prior art] of which that person is aware; the statement shall not be construed as a representation that a search has been made or that no ▶ other material information ◀ [better art] exists.

33. Section 1.98 is proposed to be amended by revising paragraph (a) to read as follows:

§1.98 Content of ▶ material information disclosure ◀ [prior art] statement.

(a) Any statement filed under §1.97 or §1.99 shall include: (1) A listing of patents, publications or other information and (2) a concise explanation of the relevance of each listed item. The statement shall be accompanied by a copy of each listed patent or publication or other item of information in written form or of at least the portions thereof considered by the person filing the statement to be pertinent. ▶ All United States patents listed should be identified by their patent numbers, patent dates and names of the patentees. Each foreign published application or patent should be cited by identifying the country or office which issued it, the document number and publication date. Each printed publication should be identified by author (if any), title, date, pages and place of publication. ◀

* * * * *

34. Section 1.99 is proposed to be revised to read as follows:

§1.99 Updating of ▶ material information disclosure ◀ [prior art] statement.

If prior to issuance of a patent an applicant, pursuant to his ▶ or her ◀ duty of disclosure under §1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental ▶ material information disclosure ◀ [prior art] statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements of §1.98.

35. Section 1.101 is proposed to be amended by revising paragraph (a) to read as follows:

§1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications [(§§1.53 and 1.55)] are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which

they have been filed except for ▶ those applications in which examination has been advanced pursuant to §1.102 and ◀ those applications in which the Office has accepted a request ▶ for waiver of patent rights ◀ filed under §1.139 ▶ which are not examined on the merits ◀ .

* * * * *

36. Section 1.118 is proposed to be revised to read as follows:

§1.118 Amendment of disclosure.

▶ (a) No amendment shall introduce new matter into the disclosure of an application after the filing date of the application (§1.53(b)). All amendments to the specification, including the claims, and the drawings filed after the filing date of the application ◀ [In original applications, all amendments of the drawings or specifications, and all additions thereto,] must conform to at least one of them as it was at the time of the filing of the application. Matter not found in either, involving a departure from or an addition to the original disclosure, cannot be added to the application ▶ after its filing date ◀ even though supported by [a supplemental oath, and can be shown or claimed only in a separate application] ▶ an oath or declaration in accordance with §1.63 or §1.67 filed after the filing date of the application ◀ .

▶ (b) If it is determined that an amendment filed after the filing date of the application introduces new matter, claims containing new matter will be rejected and deletion of the new matter in the specification and drawings will be required even if the amendment is accompanied by an oath or declaration in accordance with §1.63 or §1.67. ◀

37. Section 1.123 is proposed to be revised to read as follows:

§1.123 Amendments to the drawing.

[(a)] No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by [the Office.] ▶ bonded draftsmen, at applicant's expense. ◀ A sketch in permanent ink showing proposed changes, to become part of the record, must be filed ▶ for approval by the examiner ◀ . The paper requesting amendments to the drawing should be separate from other papers.

[(b) Substitute drawings will not ordinarily be admitted in any case unless required by the Office.]

38. Section 1.125 is proposed to be revised to read as follows:

§1.125 Substitute specification.

If the number or nature of the amendments shall render it difficult to consider the case, or to arrange the papers for printing or copying, the examiner may require the entire specification or claims, or any part thereof, to be rewritten.

A substitute specification ▶ may ◀ [will ordinarily] not be accepted unless it has been required by the examiner ▶ or unless it is clear that acceptance of a substitute specification would facilitate processing of the application. Any substitute specification filed must be accompanied by a statement that the substitute specification includes no new matter. Such statement must be a verified statement if made by a person not registered to practice before the Office. ◀

39. Section 1.131 is proposed to be amended by revising paragraph (a) to read as follows:

§1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application ▶ or a patent under reexamination ◀ is rejected on reference to a domestic patent which substantially shows or describes but does not claim the rejected invention, or on reference to a foreign patent or to a printed publication, and the applicant ▶ or the owner of the patent under reexamination ◀ shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the applicant ▶ or the confirmation of the patentability of the claims of the patent ◀, unless the date of such patent or printed publication [be] ▶ is ◀ more than one year prior to the date on which the ▶ applicant's or patent owner's ◀ application was filed in this country.

* * * * *

40. Section 1.132 is proposed to be revised to read as follows:

§1.132 Affidavits or declarations traversing grounds of rejection.

When any claim of an application ▶ or a patent under reexamination ◀ is rejected on reference to a domestic patent which substantially shows or describes but does not claim the invention, or on reference to a foreign patent, or to a printed publication, or to facts within the personal knowledge of an employee of the Office, or when rejected upon a mode or capability of operation attributed to a reference, or because the alleged invention is held to be inoperative or lacking in utility, or frivolous or injurious to public health or morals, affidavits or declarations traversing these references or objections may be received.

41. Section 1.137 is proposed to be amended by revising paragraph (b) to read as follows:

§1.137 Revival of abandoned application.

* * * * *

(b) An application unintentionally abandoned for failure to prosecute ▶, except pursuant to §1.53(d),◀ may be revived as a pending application if the delay was unintentional. A petition to revive an unintentionally abandoned application must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date of abandonment of the application. A petition to revive an unintentionally abandoned application must be accompanied by (1) a statement that the abandonment was unintentional, (2) a proposed response unless it has been previously filed, and (3) a petition fee as set forth in §1.17(m). Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three month period set forth in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

* * * * *

42. Section 1.141 is proposed to be amended by revising paragraph (b) to read as follows:

§1.141 Different inventions in one application.

* * * * *

(b) A group of claims of different categories in an application so linked as to form a single inventive concept are considered to be one invention. In particular any of the following groupings of claims of different categories may be included in the same application:

(1) In addition to a claim for a given product,

(i) A claim for one process specially adapted for the manufacture of the said product, [as where] ▶ for example, where ◀ the process of making as claimed cannot be used to make other and materially different products ▶ and the product as claimed cannot be made by another and materially different process ◀ ;

(ii) A claim for one ▶ specially adapted ◀ use of the said product, [as where] ▶ for example, where ◀ said use as claimed cannot be practiced with another materially different product ▶ and the product as claimed cannot be used in a materially different process of using ◀ ; or

(iii) Both (b)(1)(i) and (ii);

(2) In addition to a claim for a given process, a claim for one apparatus or means specifically designed for carrying out of the

said process, [that is, it] ▶ for example, where the apparatus ◀ cannot be used to practice another materially different process ▶ and the process cannot be practiced by another materially different apparatus or by hand ◀ .

* * * * *

43. Section 1.153 is proposed to be amended by revising paragraph (b) to read as follows:

§1.153 Title, description and claim, oath or declaration.

* * * * *

(b) The oath or declaration required of the applicant must comply with §[1.65] ▶ 1.63 ◀ except that the period of twelve months specified therein with respect to foreign applications is six months in the case of designs.

44. Section 1.154 is proposed to be amended by revising paragraph (e) to read as follows:

§1.154 Arrangement of specification.

The following order of arrangement should be observed in framing design specifications:

* * * * *

(e) [Signature of applicant. (See §1.57)] ▶ Signed oath or declaration (See §1.153(b)). ◀

45. Section 1.162 is proposed to be revised to read as follows:

§1.162 Applicant, oath or declaration.

The applicant for a plant patent must be the person who has invented or discovered and asexually reproduced the new and distinct variety of plant for which a patent is sought (or as provided in §§1.42, 1.43, and 1.47). The oath or declaration required of the applicant, in addition to the averments required by §[1.65] ▶ 1.63 ◀ , must state that he ▶ or she ◀ has asexually reproduced the plant. Where the plant is a newly found plant the oath or declaration must also state that it was found in a cultivated area.

46. Section 1.163 is proposed to be amended by revising paragraph (b) to read as follows:

§1.163 Specification.

* * * * *

(b) Two copies of the specification (including the claim) must be submitted, but only one [need be] signed ▶ oath or declaration is required. The ◀ [and executed; the] second copy

▶ of the specification ◀ may be a legible carbon copy of the original.

47. Section 1.172 is proposed to be amended by revising paragraph (a) to read as follows:

§1.172 Applicants, assignees.

(a) Reissue [applications] ▶ oaths ◀ must be signed and sworn to or declaration made by the inventors except as otherwise provided (see §§1.42, 1.43, 1.47), and must be accompanied by the written assent of all assignees, if any, owning an undivided interest in the patent, but a reissue [application] ▶ oath ◀ may be made and sworn to or declaration made by the assignee of the entire interest if the application does not seek to enlarge the scope of the claims of the original patent.

* * * * *

48. Section 1.174 is proposed to be amended by revising paragraph (a) to read as follows:

§1.174 Drawings.

(a) The drawings upon which the original patent was issued may be used in reissue applications if no changes whatsoever are to be made in the drawings. In such cases, when the reissue application is filed, the applicant must submit a temporary drawing which may consist of a copy of the printed drawings of the patent or a photoprint of the original drawings [securely mounted by pasting on sheets of drawing board] of the size required for original drawing [, or an order for the same].

* * * * *

49. Section 1.175 is proposed to be amended by revising the first sentence of paragraph (a) to read as follows:

§1.175 Reissue oath or declaration.

(a) Applicants for reissue, in addition to complying with the requirements of [the first sentence of §1.65] ▶ §1.63 ◀, must also file with their applications a statement under oath or declaration as follows:

* * * * *

50. Section 1.301 is proposed to be revised to read as follows:

§1.301 Appeal to U.S. Court of [Customs and Patent] Appeals ▶ for the Federal Circuit ◀.

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Appeals, and any party to an interference dissatisfied with the decision of the Board of Patent Interferences, may appeal to the U.S. Court of [Customs and Patent] Appeals ▶ for the Federal Circuit ◀. The appellant must take the following

steps in such an appeal: (a) In the Patent and Trademark Office give notice to the Commissioner and file the reasons of appeal (see §§1.302 and 1.304); (b) in the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the reasons of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent and Trademark Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

51. Section 1.302, paragraph (a), is proposed to be revised to read as follows:

§1.302 Notice and reasons of appeal.

(a) When an appeal is taken to the U.S. Court of [Customs and Patent] Appeals ▶ for the Federal Circuit ◀, the appellant shall give notice thereof to the Commissioner, and file in the Patent and Trademark Office, within the time specified in §1.304, his ▶ or her ◀ reasons of appeal specifically set forth in writing.

* * * * *

52. Section 1.303 is proposed to be revised to read as follows:

§1.303 Civil action under 35 U.S.C. 145, 146, 306.

(a) Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Appeals, and any party dissatisfied with the decision of the Board of Patent Interferences, may, instead of appealing to the U.S. Court of [Customs and Patent] Appeals ▶ for the Federal Circuit ◀ (§1.301), have remedy by civil action under 35 U.S.C. 145 or 146, as appropriate. Such civil action must be commenced within the time specified in §1.304.

(b) If an applicant in an ex parte case or an owner of a patent involved in a reexamination proceeding has taken an appeal to the U.S. Court of [Customs and Patent] Appeals ▶ for the Federal Circuit ◀, he or she thereby waives his or her right to proceed under 35 U.S.C. 145.

(c) If a defeated party to an interference proceeding has taken an appeal to the U.S. Court of [Customs and Patent] Appeals ▶ for the Federal Circuit ◀, and any adverse party to the interference shall, within twenty days after the appellant shall have filed notice of the appeal to the court (§1.302), file notice with the Commissioner that he or she elects to have all further proceedings conducted as provided in 35 U.S.C. 146, certified copies of such notices will be transmitted to the U.S. Court of [Customs and Patent] Appeals ▶ for the Federal Circuit ◀ for such action as may be necessary. The notice of election must be served as provided in §1.248.

53. Section 1.324 is proposed to be revised to read as follows:

§1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that ▶ the correct inventor or ◀ [there was a misjoinder or nonjoinder of] inventors ▶ were not named through ◀ [and that such misjoinder or omission occurred by] error [and] without deceptive intention, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in §1.20(b), or on order of a court before which such matter is called in question, issue a certificate ▶ naming only the actual inventor or inventors ◀ [deleting the misjoined inventor from the patent or adding the non-joined inventor to the patent].

54. Section 1.325 is proposed to be revised to read as follows:

§1.325 Other mistakes not corrected.

Mistakes other than those provided for in §§1.322, 1.323, 1.324, and not affording legal grounds for reissue ▶ or for reexamination, ◀ will not be corrected after the date of the patent.

55. A new §1.335 is proposed to be added to read as follows:

▶ §1.335 Filing of notice of arbitration awards.

(a) Written notice of any award by an arbitrator pursuant to 35 U.S.C. 294 must be filed in the Patent and Trademark Office by the patentee, or the patentee's assignee or licensee. If the award involves more than one patent a separate notice must be filed for placement in each patent. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the award.

(b) If an award by an arbitrator pursuant to 35 U.S.C. 294 is modified by a court, the party requesting the modification must file in the Patent and Trademark Office, a notice of the modification for placement in each patent to which the modification applies. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the court's order modifying the award.

(c) Any award by an arbitrator pursuant to 35 U.S.C. 294 shall be unenforceable until any notices required by paragraph (a) or (b) of this section are filed in the Patent and Trademark Office. If any required notice is not filed by the party designated in paragraph (a) or (b) of this section, any party to the arbitration proceeding may file such a notice. ◀

56. Section 1.565 is proposed to be amended by adding a new paragraph (e) to read as follows:

§1.565 Concurrent office proceedings.

* * * * *

▶ (e) If a claim of a patent in the process of reexamination is rejected based upon a United States patent which claims the same invention, the patent owner will be given a specified time within which to file a reissue application in order to seek an interference pursuant to §1.205, if appropriate. The failure or refusal of the patent owner to file a reissue application for purposes of seeking an interference, where appropriate, shall be taken as a disclaimer of the invention covered by the claim under rejection and will result in cancellation of the claim in the reexamination certificate issued pursuant to 35 U.S.C. 307 and §1.570. ◀

57. Section 5.12 is proposed to be revised to read as follows:

5.12 Petition for License

▶ (a) Filing of an application for patent for inventions made in the United States will be considered to include a petition for license under 35 U.S.C. 184 for the subject matter of the application. The filing receipt will indicate if a license is granted. If the initial automatic petition is not granted, a subsequent petition may be filed under paragraph (b) of this section.

(b) ◀ Petitions for license under 35 U.S.C. 184 should be presented in letter form and should include petitioner's address, and full instruction for delivery of the requested license when it is to be delivered to other than the petitioner.

SEP 30 1982

Date

Gerald J. Mossinghoff

Commissioner of Patents and Trademarks

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4559
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 4, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-06-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-17-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-12-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-30-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	7-30-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	7-21-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-12-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-05-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	8-14-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-25-80

Expiration of patents: The patents within the range of numbers indicated below expire during September 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,204,251 to 3,209,368, inclusive

Plant Patents ..... Numbers 2,552 to 2,557 inclusive

REEXAMINATIONS

NOVEMBER 2, 1982

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

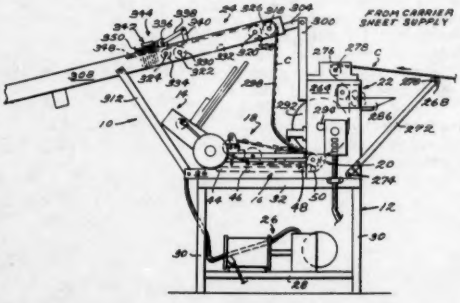
B1 3,986,378 (30th)
METHOD OF REDUCTION OF AN OXIDIZED SURFACE OF COPPER OR ITS ALLOYS
Vladimir Yakovlevich Alekhin, ulitsa F. Khodzhaeva, 18, kv. 21, Mark Moiseevich Ioff, ulitsa Vakhshskaya, 7, kv. 4, Antonina Mikhailovna Streshneva, ulitsa Pobedy, 22, all of Tashkent, U.S.S.R.
Reexamination Request No. 90/000,003, Jul. 1, 1981.
Reexamination Certificate for Patent No. 3,986,378, issued Oct. 19, 1976, Ser. No. 586,861, Jun. 16, 1975.
Continuation of Ser. No. 94,156, Dec. 1, 1970.
U.S. Cl. 72/38. Int. Cl.³ B21B 9/00.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 2, having been finally determined to be unpatentable, are cancelled.

[1. A method of reduction of an oxidized surface of copper or its alloys in the process of hot working thereof, which comprises treating the oxidized surface with a composition consisting of at least 0.15 per cent of ethyl alcohol and a substance selected from the group consisting of water, an aqueous emulsion and steam, while carrying out the hot working process.]

B1 4,270,967 (31st)
GLUING MACHINE
Clendon W. Cone, Glens Falls, N.Y., assignor to Webco Development Corp., Glens Falls, N.Y.
Reexamination Request No. 90/000,103, Nov. 5, 1981.
Reexamination Certificate for Patent No. 4,270,967, issued Jun. 2, 1981, Ser. No. 19,332, Mar. 12, 1979.
U.S. Cl. 156/299. Int. Cl.³ B32B *31/00*.

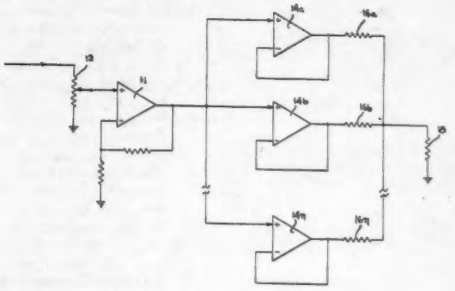


AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 3, and 10–12 are determined to be patentable as amended:

1. A process for continuously flowing a plurality of successively fed documents from a feeding device to a predetermined downstream location in order to rapidly convey documents away from the feeding device and to orient and register each document for use at the downstream location, said process comprising the steps of *individually feeding successive documents in unlapped relation from a stack,* successively receiving *the unlapped, individual* documents from the feeding device and continuously intercepting the leading edge of each document at a predetermined point and substantially simultaneously placing vertical pressure on the leading portion of each document at least at one point while continuing to feed each document in the machine direction thereby controlling vertical movement of the document while allowing horizontal movement thereof, at least initially horizontally registering each document, raising the trailing edge of each document and while maintaining the raised condition of the trailing edge substantially simultaneously receiving the next *unlapped,* successively fed document and intercepting the leading edge so that it is below the trailing portion of the leading document thereby causing an overlap between leading and trailing documents.

B1 4,081,757 (32nd)
PARALLEL POWER AMPLIFIER CIRCUITS
Paul S. Rumbaugh, Santa Ana, Calif., assignor to Altec Corporation, Anaheim, Calif.
Reexamination Request No. 90/000,048, Aug. 7, 1981.
Reexamination Certificate for Patent No. 4,081,757, issued Mar. 28, 1978, Ser. No. 743,525, Nov. 19, 1976.
U.S. Cl. 330/124R Int. Cl.³ H03F *3/68*.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended:

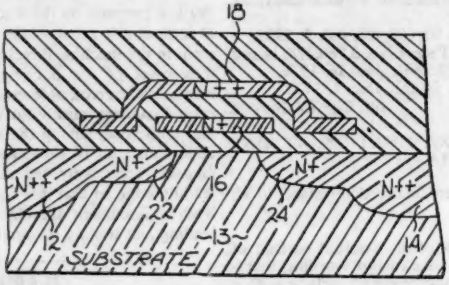
1. An amplifier for providing power to a load comprising:
a voltage amplifier circuit;
a plurality of similar power amplifier circuits connected in parallel with each other between the voltage amplifier circuit and the load, each of said circuits being connected in a closed loop configuration to have unity voltage gain, and
a similar ballasting resistor connected between the output of each of the power amplifier circuits and the load, the *value of the* resistance of said resistors being *a function of the number of said power amplifier circuits and the resistance of the load* such as to provide substantially equal sharing of the load between said power amplifier circuits even with substantially different open loop gains in the amplifier circuits.

B1 4,119,995 (33rd)

ELECTRICALLY PROGRAMMABLE AND ELECTRICALLY ERASABLE MOS MEMORY

Richard T. Simko, Los Altos, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Reexamination Request No. 90/000,114, Nov. 25, 1981.
Reexamination Certificate for Patent No. 4,119,995, issued Oct. 10, 1978, Ser. No. 778,574, Mar. 17, 1977.
U.S. Cl. 357/23 Int. Cl.[3] H01L 29/78.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–12 is confirmed.

1. An electrically programmable and erasable MOS storage device disposed on a substrate comprising:

spaced-apart source and drain regions in said substrate defining a channel;

a floating gate disposed above said channel;

a first gate disposed above said channel and said floating gate;

a second gate disposed over at least a portion of said floating gate and spaced-apart from said first gate;

said floating gate having a surface texture with radii of curvature between 25Å and 75Å for providing an enhanced electric field between said floating gate and said second gate such that electrons from said floating gate may be transferred to said second gate;

whereby, by the application of potentials to said first gate and said drain region charge may be injected into said floating gate and whereby, by the application of a potential to said second gate charge may be removed from said floating gate.

DEFENSIVE PUBLICATIONS

PUBLISHED NOVEMBER 2, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T102,401

PROCESS FOR MANUFACTURING A SELF-ALIGNING ANTIFRICTION BEARING AND RACE THEREFOR

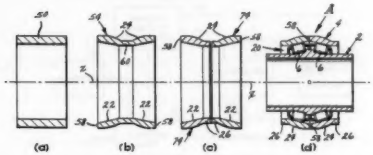
David G. Toth, 6866 Corrine Dr., NW., Canton, Ohio 44718

Filed Apr. 13, 1981, Ser. No. 253,215

Int. Cl.[3] B21D *53/10;* B21H *1/16, 1/12;* B21K *1/04*

U.S. Cl. 29—148.4 R

2 Sheets Drawing. 18 Pages Specification



An externally self-aligning tapered roller bearing, which is particularly useful in pillow blocks, utilizes a conventional double row cone assembly, the rollers of which are in the direct orientation. The cup, however, is derived from a tubular slug which is roll-formed into an intermediate shape having inwardly presented raceways opening out of each end and an outwardly presented spherical surface leading up to each end. The intermediate shape is severed intermediate its ends into two single cups, each having a tapered raceway, a spherical surface, and a front face at the large diameter end of its raceway. The two single cups are thereafter reversed in position such that the front faces are opposed, and installed over the double row cone assembly, with each cup surrounding a different row of rollers on the cone assembly. The two cups are then confined within the pillow block housing with their front faces in abutment or in close proximity. The bearing assembly which is thereby formed has the centers for the two spherical surfaces essentially located at a common point along the axis of rotation for the bearing.

T102,402

METHOD OF RECOVERING A PHOTOGRAPHIC ADDENDUM FROM A DISPERSION THEREOF

David J. Young, c/o Kodak Limited, Hemel Hempstead, Hertfordshire, England (HP1 1JU)

Filed Apr. 29, 1982, Ser. No. 373,193

Claims priority, application United Kingdom, Sep. 1, 1980, 8028150

Int. Cl.[3] G03C *1/40*

U.S. Cl. 430—449

No Drawing. 13 Pages Specification

A water-insoluble organic photographic addendum is recovered from a dispersion of a mixture thereof and an oil-former in an aqueous medium containing a hydrophilic colloid and a surface active agent by adding a selected oleophilic non-ionic surface active agent.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,070

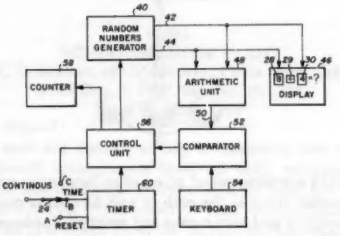
TEACHING DEVICE HAVING MEANS PRODUCING A SELF-GENERATED PROGRAM

Jerome C. Meyer, Los Altos, and James A. Tillotson, III, Sunnyvale, both of Calif., assignors to Centurion Industries, Inc., Menlo Park, Calif.

Original No. 3,584,398, dated Jun. 15, 1971, Ser. No. 861,604, Sep. 29, 1969. Application for reissue Jan. 10, 1980, Ser. No. 111,130

Int. Cl.³ G09B *7/02*

U.S. Cl. 434—201 **23 Claims**



16. A teaching device comprising:

a random signal generating means for generating random outputs; display means operatively coupled to said generating means and displaying indicia responsive to said random outputs;

computing means responsive to said random outputs and operative to provide a computed signal commensurate with a selected interrelationship between said random outputs;

response insertion means into which an observer may insert his responses to the indicia displayed by said display means; and

comparator means for comparing said [random outputs] *computed signal* with said responses and for producing an indication of correspondence therebetween.

Re. 31,071

6-AZA-3H-1,4-BENZODIAZEPINES

Walter von Bebenburg, Buchschlag, and Heribert Offermanns, Grossauheim, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

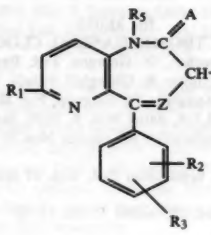
Original No. 4,008,223, dated Feb. 15, 1977, Ser. No. 507,605, Sep. 19, 1974. Continuation-in-part of Ser. No. 313,542, Dec. 8, 1972, abandoned. Application for reissue Sep. 1, 1981, Ser. No. 298,513

Claims priority, application Austria, Dec. 9, 1971, 10604/71; Argentina, Mar. 20, 1974, 252867

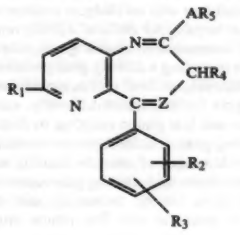
Int. Cl.³ C07D *471/04*

U.S. Cl. 260—239.3 B **15 Claims**

1. A compound of the formula:



or its tautomer of the formula:



where R_1 is a halogen, R_2 and R_3 are hydrogen, halogen, trifluoromethyl, nitro, nitrile, hydroxy, lower alkyl or lower alkoxy, R_4 is hydrogen, hydroxyl, hydroxyl acylated with an alkanoic acid of 2 to 6 carbon atoms or an alkandioic acid of 3 to 6 carbon atoms, lower alkoxy, lower alkyl, benzyl, carboxyl or carb-lower alkoxy, Z is nitrogen or NO, R_5 is hydrogen, lower alkyl, lower alkyl substituted with cycloalkyl of 3 to 6 carbon atoms, lower alkenyl, cycloalkyl of 3 to 6 carbon atoms, hydroxy lower alkyl, benzyl, acyl of alkanoic acid of 2 to 6 carbon atoms, aminoalkyl of 2 to 7 carbon atoms, mono or di lower alkyl substituted aminoalkyl of 2 to 7 carbon atoms, lower alkyl substituted with morpholino or piperidino, and A is oxygen, sulfur, or two hydrogen atoms or in the tautomeric form —NHNHCOCH$_3$, —NHCH$_3$, —OR$_5$ or O—SR$_5$ and pharmacologically acceptable salts thereof.

15. A Compound according to claim 1 which is 3-hydroxy-5-o-chlorophenyl-6-aza-7-chloro-1, 2-dihydro-3H-1, 4-Benzodiazepinone-(2).

Re. 31,072

ELECTROGRAPHIC DEVELOPING COMPOSITION AND PROCESS

Thomas A. Jadwin; Ravi Khanna; Stewart H. Merrill, and Edmond S. Perry, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Original No. 3,938,992, dated Feb. 17, 1976, Ser. No. 498,818, Aug. 19, 1974. Continuation-in-part of Ser. No. 380,317, Jul. 18, 1973, abandoned. Application for reissue Jan. 28, 1977, Ser. No. 763,962

Int. Cl.³ G03G *9/10, 9/14*

U.S. Cl. 430—99 **33 Claims**

18. A method for developing a latent electrostatic image bearing member comprising forming a latent electrostatic image on said member and applying a developer thereto, said developer including at least a toner where said toner is affected by said latent image to effect development thereof, said toner comprising a pulverized, colored, crosslinked, vinylic polymer resin obtained by (a) poly-

merizing the monomer thereof in the presence of a crosslinking agent of at least 0.01 percent by weight of the monomer, said crosslinking agent being a compound which forms a crosslinked polymer having a crosslink bond energy in excess of about 8 kcal/-mole, (b) mixing at least one coloring material with the thus obtained resin and (c) pulverizing the obtained mixture.

Re. 31,073

ELECTROMECHANICAL CLOCK

Wolfgang Fehrenbacher, St. Georgen, Fed. Rep. of Germany, assignor to Kieninger & Obergfell Fabrik fur Technische Laufwerke und Apparate, St. Georgen, Fed. Rep. of Germany

Original No. 3,990,226, dated Nov. 9, 1976, Ser. No. 513,050, Oct. 7, 1974. Application for reissue Nov. 9, 1978, Ser. No. 959,004

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1973, 2350340

Int. Cl.³ G04B *15/00, 17/02*

U.S. Cl. 368—134 **22 Claims**

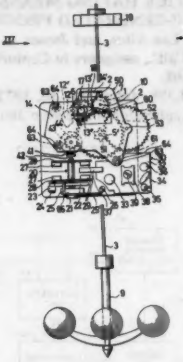
2. [The combination defined in claim 1 wherein said] *In a timepiece, in combination:*

a clockwork powered by a source of electric energy;

a torsion pendulum with an elongate resilient element having a fixedly anchored upper end and a freely rotatable lower end;

mechanical **transmission means [comprises] *comprising*** **a gear train including a driving gear positively coupled with said clockwork, a first pinion positioned adjacent said driving gear for entrainment thereby, movable mounting means for said first pinion enabling its disengagement from said driving gear, a second pinion meshing with said first pinion with a sense of rotation tending to disengage said first pinion from said driving gear upon a halting of said second pinion, biasing means for said mounting means tending to maintain said first pinion engaged with said driving gear, and a driven member positively coupled with said second pinion; [said] *and***

decoupling means comprising an oscillatable extension of said resilient element, a formation on said driven member intermittently engageable with said extension, and stop means periodically engageable by said extension in



[said] *a predetermined* **phase of an oscillatory cycle, said extension lying in the path of said formation only in the vicinity of said stop means and resisting displacement by said formation while being urged by said resilient element against said stop means, *said mounting means comprising a rocker pivoted to a stationary support for swinging about a horizontal axis, said stop means being part of said support.***

PLANT PATENTS

GRANTED NOVEMBER 2, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,910
ROSE PLANT

Dorothy J. S. Bailey, Bakersfield, Calif., assignor to San Joaquin Rose Co., McFarland, Calif.

Filed Sep. 9, 1980, Ser. No. 185,619
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—6 1 Claim

1. A new and distinct variety of rose plant of the everblooming climber class, substantially as shown and described, characterized particularly by continuous blooming habit and dense foliage, particularly at ground level, and bright red flowers borne several together in sprays and long strong laterals.

4,911
MINIATURE ROSE PLANT

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Dec. 5, 1980, Ser. No. 213,744
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by buds and flowers similar in coloring to the variety, "Tiki," a floribunda, a near azalea pink 618/3 page 74, in the "R.H.S. Horticultural Colour Chart", and further characterized by a low growing, compact plant of micro-mini proportions.

4,912
ROSE PLANT—MEITOFLAPO VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conrad-Pyle Company, West Grove, Pa.

Filed Feb. 19, 1981, Ser. No. 235,918
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—26 1 Claim

1. A new and distinct variety of Floribunda rose plant of vegetative reproduction substantially as illustrated and described characterized by the fact that

from the physical point of view, the rose plant with bronze green mature wood has a semi-erect growth habit, double flowers which are china pink on the inside and neyron pink on the outside, and consistent petals which bear a whitish unguis on both surfaces; and

from the biological point of view, the rose plant has vigorous vegetation, produces flowers in abundance, exhibits an ability readily to be forced, is not particularly susceptible to diseases, and forms long lasting flowers comprising petals which detach cleanly.

4,913
SEEDLESS FRUITING MULBERRY

Carroll Beach, Ontario, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Oct. 22, 1980, Ser. No. 199,546
Int. Cl.³ A01H 5/03
U.S. Cl. Plt.—33 1 Claim

1. A new and distinct variety of fruiting mulberry tree, substantially as herein illustrated and described, said variety being characterized in the large size and flavorful quality of its fruits, which are substantially seedless and of a blackish color when ripe, said tree ripening over a notably longer time span than most mulberries under parallel conditions, said tree being additionally characterized in its relatively compact and small habit of growth.

4,914
APPLE TREE

Johnny W. Auffet, Rte. 2, Sallisaw, Okla. 74955

Filed Feb. 25, 1980, Ser. No. 124,243
Int. Cl.³ A01H 5/03
U.S. Cl. Plt.—34 1 Claim

1. A new and distinct variety of apple tree substantially as described and illustrated and particularly characterized by a firm, non-russeting, bruise resistant, thin-skinned, fruit, maturing about thirty (30) days prior to "Yellow Delicious" grown in the same area, and further characterized by a high ascorbic acid (Vitamin C) content, while the tree has self-thinning characteristics and the leaves have ribs or veins which curve outwardly more than upwardly.

4,915
NECTARINE TREE

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed May 4, 1981, Ser. No. 259,801
Int. Cl.³ A01H 5/03
U.S. Cl. Plt.—41 1 Claim

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, characterized by late-ripening, freestone fruit in harvest approximately with the clingstone fruit of the Late Le Grand.

4,916
PEACH TREE

William J. Wilson, Fort Valley, Ga., assignor to Bountiful Ridge Nurseries, Inc., Princess Anne, Md.

Filed Feb. 23, 1981, Ser. No. 236,693
Int. Cl.³ A01H 5/03
U.S. Cl. Plt.—43 1 Claim

1. A new and distinct variety of peach tree of the yellow fleshed type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of late ripening of a fruit quite similar to the "Loring" (Unpatented) variety, extending the season on the order of seven to fourteen days, the excellent sizing of the fruit even where the tree is carrying a heavy crop, the attractive fruit having overall yellowish red appearance with substantial areas of red, the flesh being of yellowish appearance overall, distinctly reddish cavity and further the ability to produce fruit on a comparable basis in widely spaced geographic areas.

4,917
PEACH TREE

Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Apr. 20, 1981, Ser. No. 255,389
Int. Cl.³ A01H 5/03
U.S. Cl. Plt.—43 1 Claim

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by it's large size, vigorous and upright growth, a productive and regular bearer of medium to large, firm, yellow flesh, clingstone fruit, maturing six days after Royal Gold peach (U.S. Plant Pat. No. 2,663), but having firmer fruit, with heavier production; the fruit is further characterized by its high degree of attractive red skin color, its good eating quality and the high degree of firmness when mature provides for good shipping characteristics.

4,918

ESCALLONIA PLANT NAMED 'ESCALLONLA TERRI'

Louis E. Gavello, 3436 Maricopa Ave., Richmond, Calif. 94804

Filed Mar. 16, 1981, Ser. No. 243,827
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of Escallonia plant substantially as illustrated and described.

4,919

VARIEGATED PITTOSPORUM PLANT

Ted L. Turner, Sr., 6503 S. Padre Island Dr., Corpus Christi, Tex. 78412

Filed May 12, 1981, Ser. No. 263,095
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of pittosporum, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of: A dwarf and compact habit of growth makes it especially suitable as a border plant, as a small hedge, in planter boxes and as a pot plant; a slow rate of growth which is advantageous in that frequent pruning is not necessary to maintain the shrub in a pleasing shape; an ability to be asexually reproduced; the ability to provide a shrub having a plurality of colors by reason of the variegated nature of the leaves of the new variety, which leaves are medium green with pronounced variegated margins of irregular depth of pale yellow color, and which leaves grow alternately in a whorl on the branches; and the ability to tolerate pruning in order that attractive shapes can be maintained.

4,920

MINIATURE CARNATION

Angelo J. Siri, 940 O'Connor St., East Palo Alto, Calif. 94303

Filed Apr. 9, 1981, Ser. No. 252,582
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—70 1 Claim

1. A new and distinct carnation cultivar as described and illustrated.

4,921

CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Sep. 4, 1980, Ser. No. 184,404
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—79 1 Claim

1. A new and distinct cultivar *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name El Charo, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; orange-bronze ray floret color with rapid color oxidation; yellow green (immature) to yellow (mature) disc floret color; diameter across face of capitulum ranging from 70 to 90 mm. at maturity; uniform nine week photoperiodic flowering response to short days; tall plant height, medium peduncle length; and minimum pollen production.

PATENTS

GRANTED NOV. 2, 1982

ERRATA

For CLASS	See PATENT NO.
070–014	4,356,580
376–391	4,357,209
524–040	4,357,267
524–285	4,357,268
523–206	4,357,269
523–335	4,357,270
523–212	4,357,271
524–724	4,357,461
373–095	4,357,485
378–057	4,357,535
378–103	4,357,537
378–175	4,357,538
378–170	4,357,539
378–135	4,357,555

PATENTS

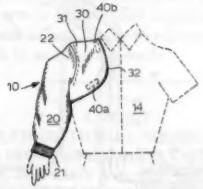
GRANTED NOVEMBER 2, 1982

GENERAL AND MECHANICAL

4,356,569
ARMORED SKIN DIVING SUIT
Jeremiah S. Sullivan, 1105 Sunset Cliffs, San Diego, Calif. 92107
Filed Nov. 24, 1980, Ser. No. 209,387
Int. Cl.³ F41H *1/02*
U.S. Cl. 2—2.5 **3 Claims**

1. A shark deterring suit comprising:
a flexible garment,
a plurality of rigid shield elements bonded to said garment substantially covering the surface area thereof,
and said garment comprises a chain mail garment and said rigid shield elements are plastic molded at spaced intervals on said garment sandwiching said chain mail centrally of said shield elements.

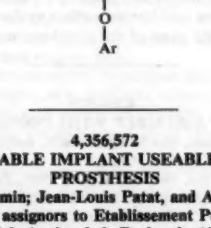
4,356,570
DIFFERENTIAL THERMAL GARMENT
Ruth P. Vernon, and James L. Cox, both of 615 Silverton St., Orlando, Fla. 32808
Filed Jun. 20, 1980, Ser. No. 161,268
Int. Cl.³ A41D *13/08*
U.S. Cl. 2—16 **4 Claims**



1. A thermal garment formed of flexible insulating material for materially retarding the flow of heat from the zone surrounding the muscles and tissues of a selected manipulatable human body appendage and the adjoining major appendage-connecting muscles of an athlete or other person needing or desiring to maintain warmth in an appendage and its connecting muscles and with need or desire to permit a relatively greater degree of cooling of adjacent portions of the body, comprising:
a sleeve extending along and about the length of said appendage desired to be kept warm, which in the case of an arm is down the length of the arm to the wrist zone,
a skirt connecting with said sleeve and extending substantially about and over the major body muscles which connect the main body of the athlete to said appendage, which muscles in the case of an arm appendage are the adjacent deltoid, pectoralis, teres major and teres minor muscle groups,
said sleeve terminating adjacent the edges of such muscle groups,
and attaching means for removably attaching said skirt in generally close-fitting relationship along its periphery, to the exterior surface of an athletic uniform or other body-covering clothing worn by the athlete or other wearer, whereby body heat loss from said appendage and the adjoining main body-connecting and appendage-manipulating muscles will be thereby materially retarded in the area selectively covered by said garment, while the adjoining remainder of the body not covered by said garment may cool at a differentially greater rate as a function of the insulating quality of said uniform and/or such other garment or other covering as may be over the remaining portion of the body, or the absence of any such covering as the case may be, such as is normally the case with body areas not normally covered by a uniform or other clothing, such as the face and hands.

4,356,571
PROSTHETIC DEVICE
Friedrich Esper, Leonberg, and Walter Gohl, Aidlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Oct. 10, 1980, Ser. No. 195,870
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1979, 2941369
Int. Cl.³ A61F *1/00*
U.S. Cl. 3—1 **9 Claims**

1. Medical prosthesis suitable for implant use comprising a cured fiber reinforced resin body, said body having a substrate portion and a surface portion and at least said surface portion comprises a triazine resin; said triazine resin being a set liquid triazine thermosetting resin of addition polymerization type having the functional group $Ar\text{-}(\text{-}O\text{—}C{\equiv}N)_n$ which has been set by heating to form the triazine ring



4,356,572
BIODEGRADABLE IMPLANT USEABLE AS A BONE PROSTHESIS
Genevieve Guillemin; Jean-Louis Patat, and Alain Patel, all of Paris, France, assignors to Etablissement Public dit: Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France
Filed Jul. 8, 1980, Ser. No. 167,390
Claims priority, application France, Jul. 12, 1979, 79 18120
Int. Cl.³ A61F *1/24, 5/04*
U.S. Cl. 3—1.9 **23 Claims**

2. A biodegradable bone prosthesis or implant made of a coherent material comprising calcium carbonate in crystalline

form and being in the form of a replacement part for bone substance.

4,356,573

BREAST PROSTHESIS

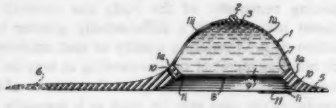
Bodo Knoche, Stoeckumer Str. 24, D-3204 Nordstemmen 4, Fed. Rep. of Germany

Filed Dec. 23, 1980, Ser. No. 219,858

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1980, 3031223

Int. Cl.³ A61F 1/00

U.S. Cl. 3—36 9 Claims



1. Breast prosthesis formed in part by mold casting a casing from a soft-elastic, porous, adherent, flesh colored silicone rubber cross-linked with a hardener, said casing comprising a center part having the shape of a female breast, and a border part extending around said center part, said center part including a generally cup-shaped wall having a convex shaped side facing outwardly and a concave shaped side facing inwardly, said convex shaped side being shaped in the form of a female breast including an areola and a nipple, said concave shaped side having a shape complementary to a female breast, said center part having an increased thickness section as compared to the remainder of said cup-shaped wall with said section forming the edge of said cup-shaped wall connected to said border part and forming an annular step extending around the inside of said cup-shaped wall and located adjacent said border part, said border part projecting laterally outwardly from said increased thickness section and forming a border surface arranged to fit against the chest of the prosthesis wearer, said step extending from said concave shaped side in the direction toward and being spaced from said border surface and having an edge spaced from said concave shaped side and being closer to said border surface, a grain-like paste mixture filling the interior of said cup-shaped wall approximately to the range of said step, said grain-like paste mixture comprising a mixture of a silicone gel and vulcanized silicone grits, and a flexible cover layer being formed of a tough silicone rubber cross-linked with a hardener extending over and in contact with the surface of said mixture and secured to said increased thickness section extending around the edge of said cup-shaped wall for retaining said mixture within said center part and said cover layer being spaced from said border surface so that said cover layer is spaced from the chest of the prosthesis wearer.

4,356,574

FAUCET ASSEMBLY WITH PINCH VALVES

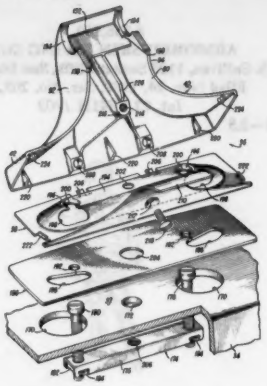
Dwight N. Johnson, San Marcos, Calif., assignor to JH Industries, Inc., San Marcos, Calif.

Division of Ser. No. 147,701, May 8, 1980, Pat. No. 4,313,469. This application Sep. 17, 1981, Ser. No. 303,158

Int. Cl.³ E03C 1/04

U.S. Cl. 4—192 9 Claims

1. A faucet assembly for mounting on a sink deck with spaced connection holes of predetermined configuration, said faucet assembly comprising a base plate adapted to overlie the sink deck top surface and the connection holes; a faucet body; fastening means accessible from above the sink deck for securing said body to said base plate, a mounting assembly including first mounting means adapted to underlie the sink deck adjacent said connection holes and including vertical portions connected to said first mounting means and adapted to extend



through the connection holes and engageable with said base plate for securing said base plate above the sink deck.

4,356,575

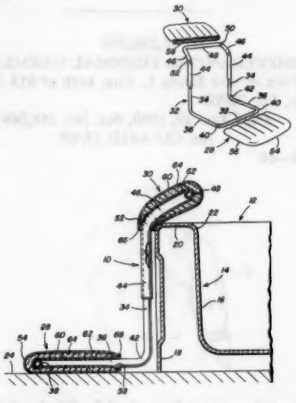
KNEELING APPLIANCE FOR USE WITH BATHTUBS

Linda T. Terry, 321 Ehringhaus St., Hendersonville, N.C. 28739

Filed Nov. 26, 1980, Ser. No. 210,579

Int. Cl.³ A47K 3/00

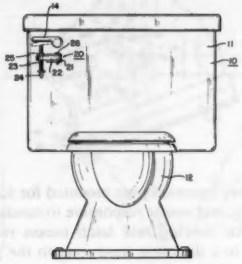
U.S. Cl. 4—559 5 Claims



1. In combination with a bathtub including an outer side wall extending upwardly from a floor upon which said tub is supported, said outer side wall including an upper edge portion, a kneeling appliance for use by a person kneeling outwardly of and facing said outer side wall and desiring to reach down into said tub, said appliance including vertically spaced upper and lower frame portions and a connecting frame portion extending between and supporting said upper frame portion from said lower frame portion, said lower frame portion being substantially horizontal and supported from said floor immediately outwardly of said outer side wall and said upper frame portion being inclined, disposed closely over said upper edge portion, extending through a vertical plane containing the outer surface of said side wall and having its lower marginal portion disposed to the outer side of said outer side wall, said connecting frame portion extending between said lower frame portion and said lower marginal portion of said upper frame portion, said

upper and lower frame portions each including an upwardly facing cushion supported therefrom.

4,356,576
FLUSH CONTROL APPARATUS
Jerry Gala, 626 King George Rd., Fords, N.J. 08863
Filed May 20, 1981, Ser. No. 265,587
Int. Cl.[3] E03D 1/00; A47L 17/00
U.S. Cl. 4—661 8 Claims



1. A flush control apparatus adapted for mounting beneath the flush handle associated with the water storage tank of a commode and for blocking the path of said handle to control the amount of water released in a first mode and for allowing said handle to be moved to completely flush the entire contents of said tank in a second mode, said apparatus comprising:

a bracket having a central channel and adapted to be mounted directly below said flush handle, a lever arm pivotally coupled to said bracket within said channel and extending relatively parallel to said flush handle, a vertically adjustable member adjustably positioned at the other end of said lever arm and positioned transverse thereto, whereby adjustment in the vertical plane limits the movement of said flush handle when coacting with said adjustable member to cause a controlled amount of water to be discharged from said tank during said first mode and when said lever arm is pivoted said adjusting means is cleared from the path of said handle to release the entire contents of said tank in said second mode.

4,356,577
MULTIPOSITIONAL MEDICAL BED
Gene E. Taylor, 18414 DeBie, Cerritos, Calif. 90701, and Donald S. McCulloch, 1655 Clark Ave., Apt. 129, Long Beach, Calif. 90815
Filed Mar. 31, 1980, Ser. No. 135,877
Int. Cl.[3] A61G 7/00, 7/10
U.S. Cl. 5—62 2 Claims

1. A multipositional medical bed adapted for changing a patient's position in said bed comprising:

a platform,

an elongated outer frame,

means for pivotally mounting said outer frame on said platform,

an inner frame,

means for rotatably mounting said inner frame along its longitudinal axis within said outer frame,

a lower mattress,

means for mounting said lower mattress on said inner frame to support said patient thereon,

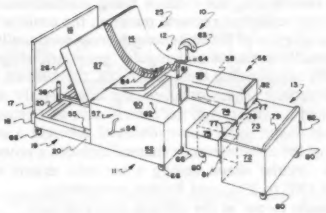
an upper mattress,

means for mounting said upper mattress to cover said patient,

means for tilting said outer frame from a horizontal position to a position at least about 45° above horizontal at the head end, and

means for rotating said inner frame 180° while said outer frame is tilted above horizontal.

4,356,578
OBSTETRICS BED
Philip H. Clark, 2036 S. 13th East, Salt Lake City, Utah 84105
Filed Sep. 15, 1980, Ser. No. 187,514
Int. Cl.[3] A61G 7/00
U.S. Cl. 5—66 13 Claims



1. An obstetric bed comprising:

a head section having

a support base;

a backrest carried by said support base and forming one end of said head section;

hinge means pivotally connecting said backrest to said support base;

means for rotating said backrest about said hinge means between a raised position and a lowered level bed position and for locking said backrest in selected positions relative to said support base;

a long extension carried by the support base and extending from the hinge means, said long extension having a top surface forming a planar continuation of the backrest surface when the backrest is in its lowered level bed position;

a short extension carried by the support base and extending from the hinge means, said short extension having a top surface forming a planar continuation of the backrest surface when the backrest is in its lowered level bed position and extending parallel to and spaced from the long extension;

a generally L-shaped foot section having

a first leg sized to fit snugly between the long and short extensions and a top thereof forming a planar continuation of the top surfaces of the long and short extensions when the first leg is fitted snugly between the extensions and a second leg from which the first leg projects, said

second leg forming a continuation of the short extension and engaging the long extension when the first leg is fitted snugly between the extensions, whereby an upper surface thereof is contiguous with the upper surfaces of the long and short extensions and the upper surface of the first leg; and

wheel means beneath the foot section whereby the foot section is movable with respect to said head section and the first leg is movable from between the extensions.

4,356,579

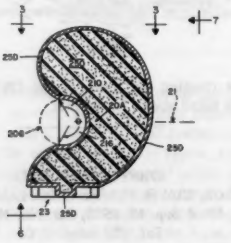
BOLSTER TYPE CUSHIONS FOR THERAPEUTIC USE

Helen I. Bond, 709 Olson Rd., Longview, Wash. 98632

Filed Mar. 17, 1980, Ser. No. 130,830

Int. Cl.³ A61H *15/00*; A47G *9/00*

U.S. Cl. 5—431 **7 Claims**



1. A bolster-type cushion for therapeutic use, longitudinally extending for a finite-length between lead-end and trail-end along a central-axis, the cushion being predominately formed of a porous resilient structural material, the cushion along the major proportion of the finite-length cross-sectionally having a dimensionally constant and regular geometric-shape circumferentially surrounding the central-axis, the cushion having an external surface which commencing immediately rearwardly its lead-end diverges from the central-axis, said cross-sectional geometric-shape being non-cylindrical wherein a minor proportion of the circumference thereof includes a recessed channel in a circular shape having a sectorial extent within the range of 190° to 290°, and further comprising:

(a) handle means at the cushion trail-end; and

(b) water-proof jacket means extending along the entire external surface, said jacket means being free of water-pervious gaps whereby the cushion can be periodically immersed into an acqueous cleansing medium without leakage of water into the pores of the resilient structural material of said cushion.

4,356,580

SHOWCASE LOCK FOR SLIDING DOORS

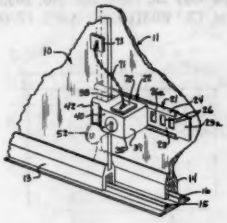
Thomas D. Kurtz, 1101 First Ave., Rock Falls, Ill. 61071

Filed Oct. 20, 1980, Ser. No. 198,434

Int. Cl.³ E05B *17/04, 65/08*

U.S. Cl. 70—14 **19 Claims**

1. A lock for use on by-passing type doors to lock the doors in a closed position with adjacent end portions to the doors in spaced overlapping relation, the lock comprising, an elongated keeper plate, means for mounting the keeper plate on one of the doors with one side of the plate overlying one face of that door, a pair of keeper flanges along opposite side edges of the keeper plate projecting inwardly toward each other and spaced from the other side of the keeper plate to define a pair of opposed lengthwise extending grooves at said other side of the keeper plate opening toward each other, means defining a row of stops at said other side of the keeper plate intermediate the keeper flanges, a lock housing having means defining a pair of parallel housing flanges fixed to the housing and disposed in a plane at one side of the housing and projecting outwardly away from each other and dimensioned to be slidably received in the pair of lengthwise extending grooves in the keeper plate to slidably support the housing on the keeper plate, the lock housing being engageable with an edge of the other door when the housing flanges are disposed in the grooves in the keeper plate, latch means at said one side of the housing intermediate said housing flanges and adapted to engage said stops on the



keeper plate, a key operated plug mounted for turning only in said lock housing, and means responsive to turning of said key operated plug for moving said latch means relative to the housing flanges in a direction transverse to the plane thereof between a latch position for engaging the stops and a release position for disengaging the stops.

4,356,581

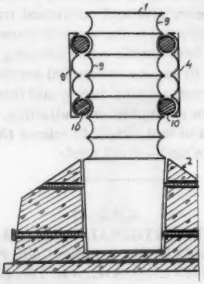
BEARING SYSTEMS FOR BRIDGES, OVERPASSES AND STRUCTURES

Henry C. Zur, 3222 W. Daily, Phoenix, Ariz. 85023

Continuation-in-part of Ser. No. 841,096, Oct. 11, 1977, Pat. No. 4,181,995. This application Dec. 31, 1979, Ser. No. 108,748

Int. Cl.³ E01D *19/02*

U.S. Cl. 14—75 **8 Claims**



1. A bearing assembly for bridges and heavy structures formed of three main elements which assemble to form the bearing as follows:

a. a "U" type shaped female receiving element formed with horizontal flutings on the vertical sides formed in the interior of said female "U" type element and provided with means positioning and securing said element to the supported structure;

b. a male shaped element, inserted and fitted into the recess of said "U" type receiving element and formed with horizontal flutings on its outer vertical sides, shaped to align with the flutings of of the receiving element and provided with means positioning and securing said inserted element to the supported structure;

c. cores fitting within and filling the opposing recesses formed by said flutings of the opposing vertical sides of the inserted and the receiving elements, when said flutings have been aligned to correspond, providing for the inser-

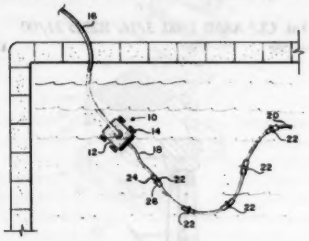
tion of at least one core on each of the opposing sides of the inserted elements, and whereby the supported structure is positioned and secured to the supporting structure.

4,356,582

POOL SWEEP BRUSH

Thomas G. Stephenson, 7881 Birchwood, La Palma, Calif. 90623

Filed May 18, 1981, Ser. No. 264,285
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—1.7 **6 Claims**



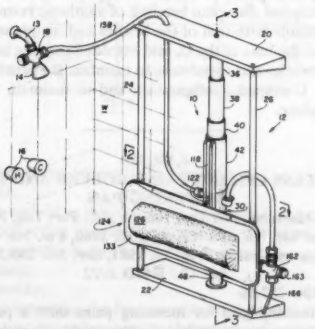
1. In an automatic cleaner for a swimming pool comprising an elongated flexible hose having a discharge nozzle and supplied with water at sufficient pressure to create a water jet reaction effect sufficient to oscillate the end of said hose and said nozzle and move said hose across the surface of said pool and wherein said hose is provided with a plurality of fixed collars to journal rotatable rings at spaced-apart locations, the improvement which comprises positioning a plurality of ring brushes about said hose, each ring brush comprising a ring which is freely rotatably received over said hose and journalled between said fixed collars and a plurality of stiff bristles supported on and radially projecting from the outer edge of said ring.

4,356,583

LIQUID-OPERATED RECIPROCATING PRIME MOVER ASSEMBLY AND BODY WASHING APPARATUS INCORPORATING SAME

Lutz Wallasch, 1036 Archer Pl., Baldwin, N.Y. 11510, and Helmut K. Grundler, 74 E. Valley Stream Blvd., Valley Stream, N.Y. 11580

Filed Mar. 12, 1981, Ser. No. 243,245
Int. Cl.³ A47K *7/04*
U.S. Cl. 15—21 E **20 Claims**



2. In an apparatus for facilitating cleansing of a user's body and including operatively rotatable brush means for reciprocation along a rectilinear axis, and rack means defining the rectilinear axis, the improvement comprising a liquid-operated prime mover assembly for carrying the brush means reciprocatingly along said rectilinear axis of the rack means, said prime mover assembly comprising:

upper reservoir means for alternatingly receiving and discharging an operating liquid and being axially expandable in one direction along said rectilinear axis as liquid is received therein and axially contractable in the opposite direction along said axis as liquid is discharged therefrom;

lower reservoir means for alternatingly receiving and discharging an operating liquid and being axially contractable in said one direction and axially expandable in said opposite direction as liquid is respectively discharged therefrom and received therein; and

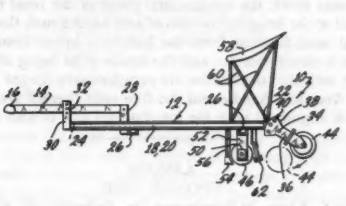
valve means disposed intermediately and connectingly between said upper and lower reservoir means and including passage means communicating with the interiors of each said reservoir means for directing operating liquid from a supply source thereof alternatingly into said upper and said lower means to effect reciprocating movement of said valve means and the brush means carried thereon along said rectilinear axis.

4,356,584

APPARATUS FOR REMOVING WATER FROM LARGE SURFACE AREAS

Richard F. Zamboni, Huntington Beach, Calif., assignor to Frank J. Zamboni & Co., Paramount, Calif.

Filed Jul. 25, 1980, Ser. No. 172,167
Int. Cl.³ A47L *11/00*
U.S. Cl. 15—98 **15 Claims**



1. An apparatus for removing standing water from a large surface area which comprises:

a housing capable of being moved across said surface area;

an elongated rolling means rotatably mounted on said housing with the elongated axis of said rolling means transverse to the direction of movement of said housing on said surface area and including at least a portion of said rolling means located on the underside of said housing, said rolling means having an essentially nonwater absorbant, wear resistant surface, said portion of said rolling means located on the underside of said housing contacting a portion of said surface area and rolling on said surface area as said housing moves across said surface area, said rolling means capable of displacing water on said surface area to a position in front of said rolling means and in so doing imparting a momentum to said water and forming a moving wave of water in front of said rolling means as said rolling means moves across said surface area;

wave direction changing means located on the underside of said housing in front, with respect to the direction of travel of said housing, of said portion of said rolling means located on the underside of said housing and associated with at least that portion of said rolling means located on the underside of said housing, said wave direction changing means capable of interaction with said wave of water to modify the momentum of at least a portion of said wave of water, said modified momentum of said wave of water maintaining said wave of water essentially below the underside of said housing, at least a component of said

modified momentum of said wave of water being directed transverse to the direction of travel of said housing toward at least one of the ends of said rolling means.

4,356,585

HYGIENIC DENTAL APPLIANCE

Martin R. Protell, 215 E. 68th St., New York, N.Y. 10021, and Howard L. Ward, 150 Central Park South, New York, N.Y. 10019

Filed Apr. 8, 1981, Ser. No. 252,166
Int. Cl.³ A46B 9/04
U.S. Cl. 15—111 7 Claims

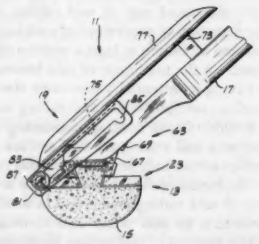
1. A dental appliance comprising an elongated handle portion including a tongue grooming region formed therein, a head portion having a plurality of discrete bristle tufts extending from said head in spaced relationship to each other, said head portion being entirely disposed below the longitudinal axis of said handle, and an offset connecting portion rigidly joining said head to said handle such that such connecting portion extends downwardly from the longitudinal axis of said elongated handle to a point below the level of said head and extends upwardly to join with said head, said bristle tufts of said head being in four longitudinal rows, the free ends of said bristles of the two center rows forming a planar surface and extending above the uppermost point of the free ends of the two outer rows, the longitudinal plane of the head being not parallel to the longitudinal axis of said handle such that the end of said head furthest from the handle is lower than the end which is closer thereto, and the bristle tufts being of unequal length such that the bristles are progressively longer traveling away from said handle and the free ends thereof are substantially in alignment with the longitudinal axis of said handle.

4,356,586

SPONGE MOP

Warren C. Klotz, 29 Huntington Dr., Belleville, Ill. 62223

Filed Apr. 13, 1981, Ser. No. 253,774
Int. Cl.³ A47L 13/146
U.S. Cl. 15—119 A 20 Claims



1. A mop comprising a mop head having opposing front and back jaws for clamping a sponge or the like therebetween, each jaw having an upper portion adapted to overlie the sponge and a depending clamping portion engageable with a respective front or back of the sponge, the upper portions of the jaws being formed for sliding interengagement with one another thereby to permit the jaws to be slidably moved between an open position in which their clamping portions are spaced relatively far apart for placement of a sponge therebetween and a closed position in which the clamping portions are closer together for clamping the sponge therebetween, and means for holding the two jaws in said closed position with the sponge clamped therebetween, said holding means comprising a spring clip mounted on the upper portion of one jaw for engagement with the clamping portion of the other jaw when the jaws are in said closed position to hold the two jaws closed.

4,356,587

BRUSH COMPONENTS AND THEIR MANUFACTURE

David Holding, Bolton, England, assignor to Schlegel (UK) Limited, Seacroft, England

Filed Aug. 6, 1980, Ser. No. 175,660
Claims priority, application United Kingdom, Aug. 7, 1979, 7927461
Int. Cl.³ A46B 1/00, 3/16; B29D 31/00
U.S. Cl. 15—199 15 Claims

1. A method of manufacturing a brush component comprising the steps of arranging a plurality of bristles of synthetic resinous material substantially in line in the required density; arranging a membrane of synthetic resinous material which is compatible with that of the bristles relative to the line of bristles such that the line of bristles and membrane are superimposed one above the other so that the membrane extends from one end of the bristles across at least half the length of the bristles; folding the bristles and the membrane through 180° about the substantial midpoint of the bristles into a generally U-shaped configuration; holding the bristles and membrane in this folded position and passing the folded bristles and membrane through an extruder and at the same time causing the folded portion to be heated and thus softened and extruding a beading of synthetic resinous material compatible with that of the bristles and membrane onto said folded portion at a temperature and pressure sufficient to cause fusion between the membrane, bristles and beading.

7. A brush component comprising an array of aligned synthetic resinous bristles bent into a generally U-shaped configuration with a membrane of synthetic resinous material compatible with that of the bristles associated with the bristles and extending throughout the depth of at least one arm of the U and an extruded clamping beading of synthetic resinous material compatible with that of the bristles and membrane extending around the base of the U, said extruded beading being fused with the bristles and membrane to maintain the bristles in their generally U-shaped configuration and to maintain the membrane in place.

4,356,588

DRIPLESS CEILING PAINT ROLLER AND PAINT METERING PAN

Frank C. Martucci, 360 Tom Hunter Rd., Fort Lee, N.J. 07024

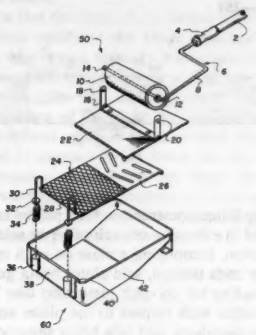
Division of Ser. No. 140,758, Apr. 16, 1980, Pat. No. 4,337,002.
This application Aug. 17, 1981, Ser. No. 293,278
Int. Cl.³ B44D 3/12
U.S. Cl. 15—257.06 3 Claims

1. A metering grid for metering paint onto a paint roller from a tray having a shallow portion and a deep portion for containing a level of paint, the grid comprising:

a grid member having a first part for overlaying the deep portion, and a second part for overlaying the shallow portion;

said second part having a bent edge hooked over an upper edge of said tray shallow portion; and

biasing means connected to said grid member and engagable with the tray for biasing said grid member up and out of the level of paint in the tray, so that a roller is charged with paint, at a proper amount, by pressing the roller



against the grid member to move the grid member and roller into the paint against the bias of said biasing means;

said biasing means comprising a pair of springs connected to an edge of said first part of said grid member opposite said second part bent edge and near opposite corners of said first part edge.

4,356,589

REFUSE COLLECTING APPARATUS

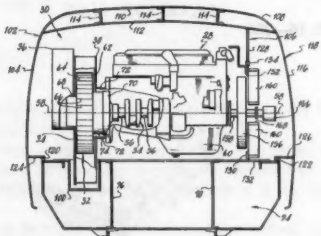
Barrie E. Mealing, and Raymond H. Payne, both of Warwick, England, assignors to Hestair Eagle Limited, Warwick, England

Filed Nov. 12, 1980, Ser. No. 206,203

Claims priority, application United Kingdom, Nov. 17, 1979, 7939865; Mar. 28, 1980, 8010458

Int. Cl.³ E01H *1/08*

U.S. Cl. 15—320 **10 Claims**



1. Road sweeping apparatus comprising:

brush gear;

mounting and drive means for the brush gear;

a refuse collecting nozzle associated with the brush gear to collect material swept by the brush gear;

a refuse tank;

a fan assembly;

air ducts connecting the fan assembly to the refuse tank, and connecting the refuse tank to the refuse collecting nozzle whereby the fan assembly can be caused to generate suction at the nozzle so as to draw refuse into the tank;

an auxiliary internal combustion engine drivably connected to the fan of the fan assembly; and

a water tank and associated spray gear to spray water during sweeping operations;

said auxiliary internal combustion engine being mounted directly above the water tank.

4,356,590

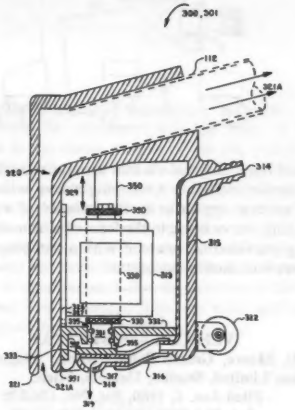
CARPET CLEANING SYSTEM

Aaron Goldsmith, 21821 Burbank Blvd., Woodland Hills, Calif. 91367

Continuation of Ser. No. 174,270, Jul. 31, 1980, and Ser. No. 173,974, Jul. 31, 1980, and Ser. No. 162,577, Jun. 24, 1980. This application Nov. 21, 1980, Ser. No. 208,939

Int. Cl.³ A47L *11/00*

U.S. Cl. 15—321 **5 Claims**



1. Apparatus for in-place cleaning of textile floor covering for use in conjunction with a source of cleaning fluid under pressure, and a vacuum fluid recovery system and conduits connecting the apparatus to the cleaning fluid and the vacuum system comprising:

A. a rigid housing connected to the conduits and adapted to engage the surface of the floor covering;

B. a vibrator mounted in said housing;

C. a beater bar tube movably mounted on said housing so as to engage the surface of the floor covering and mechanically connected to said vibrator;

i. means to connect said tube to the cleaning fluid source;

ii. a plurality of orifices formed in said tube adjacent the floor covering and adapted to project the cleaning fluid into the floor covering;

D. a vacuum port defined in said housing adjacent said beater bar tube; and

E. flexible sealing means connected between said beater bar tube and said vacuum port to retain the vacuum and enhance recovery of the cleaning fluid.

4,356,591

VACUUM CLEANER

Ernst Lude, Stuttgart, Fed. Rep. of Germany, assignor to Rommag P. Wörwag & Co., Romanshorn, Switzerland

Filed Nov. 5, 1980, Ser. No. 204,360

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944749

Int. Cl.³ A47L *9/00*

U.S. Cl. 15—326 **10 Claims**

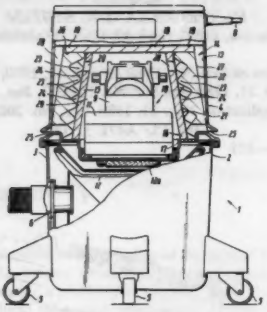
1. A vacuum cleaner, comprising:

a housing having a hood and at least one suction connection and at least one discharge opening, said hood having an inner surface;

a dust filter interposed between said suction connection and said discharge opening;

a suction apparatus which is surrounded by said hood and includes a blower and an electric motor; and

a noise damping device arranged between said inner surface



of said hood and said suction apparatus, said noise damping device including a damping sleeve which surrounds said suction apparatus in the manner of a mantle, said damping sleeve being in the form of a truncated cone, and being provided on one end with a damping plate which covers said suction apparatus.

4,356,592

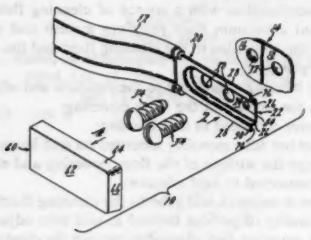
VEHICLE ASSIST STRAP

Ronald D. Moore, Grosse Pointe, Mich., assignor to Chivas Products, Limited, Sterling Heights, Mich.

Filed Jun. 5, 1980, Ser. No. 156,820

Int. Cl.³ B60N *3/02*; A47B *95/02*

U.S. Cl. 16—125 **17 Claims**



1. An assist strap for attachment to a surface, said strap comprising a strength-imparting substantially flat strap member extending the length of said strap and having at least one end formed to provide an integral base portion and a pair of integral longitudinally-extending flanges, said flanges being disposed on respective sides of said formed end with each flange providing a contiguous axial extension of the surface of said strap member, fastening means associated with said base portion for fastening said strap member to said surface, a cover having a pair of inwardly extending lips slidingly engageable with said longitudinally-extending flanges and movable therealong in one direction to a first position wherein each such lip engages a respective one of said longitudinally extending flanges to secure said cover to said formed end and whereby said cover conceals said fastening means, said cover being slidable along said longitudinally-extending flanges in an opposite direction to a second position wherein said pair of lips disengage said pair of flanges and whereby said fastening means is exposed.

4,356,593

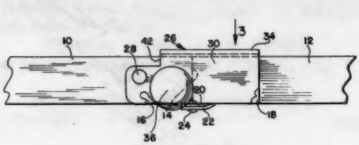
SAFETY LATCH COVER FOR A HINGE JOINT

Richard T. Heininger, Gardner, Mass., and Benjamin K. Burnham, Merrimack, N.H., assignors to Gem Industries, Inc., Gardner, Mass.

Filed Oct. 6, 1981, Ser. No. 308,986

Int. Cl.³ E05D *5/02*

U.S. Cl. 16—251 **6 Claims**



1. A safety hinge construction for a pair of members adapted to be located in extension of each other or selectively in a side by side relation, comprising a plate on each member adjacent the adjacent ends thereof, said plates being generally alike,

an outstanding tab on each plate, said tabs being located at right angles with respect to the plates and at one side of the two members, said tabs being superposed, means pivoting said tabs together and providing for pivoting the two members from extended condition to the side by side relation,

a latching cover for the adjacent ends of said members, said cover comprising a generally channel shaped element, means pivoting the same to one of said plates, said channel shaped element including spaced legs straddling the members and covering the area of abutment of said members, and a spring pressed catch on one of said legs to secure the members in latched condition.

4,356,594

FRICTION HINGE HAVING A BALANCING SPRING

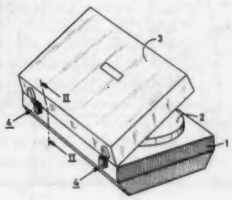
Jozef A. Grosemans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 120,412, Feb. 11, 1980, abandoned. This application Sep. 17, 1981, Ser. No. 303,313

Claims priority, application Netherlands, Feb. 13, 1979, 7901121

Int. Cl.³ E05D *11/06*

U.S. Cl. 16—256 **3 Claims**



1. A friction hinge arrangement for connecting a cover to a base, such as in a record player, the cover being pivotal relative to the base between a closed and an open position and being retainable in the open or any other position between the closed and open positions by friction forces in the hinge, which counteract the force of gravity tending to close the cover, comprising

a plastic friction member formed as a strip-shaped part which is doubled over to form two strip-shaped limbs interconnected by a bend, the limbs being substantially parallel to and spaced from each other, recesses being formed in the limbs at the bend to define a hinge axis,

a hinge member having a cylindrical portion which functions as a hinge pin, disposed in said recesses, and a connection portion for connection to a cover, said hinge

member being movable about the hinge axis between a first position corresponding to the closed position of the cover, and a second position corresponding the the open position of the cover, and

clamping members for urging the limbs of the friction member toward each other and thus clamping the hinge pin between the limbs,

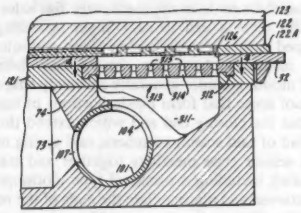
characterized in that the hinge pin is formed with an opening extending transversely to the hinge axis, and the hinge comprises a wire spring helically wound around a part of the hinge pin, said spring having a first free end and a second free end, the first free end being lodged in the transverse opening of the hinge pin, and the second free end being disposed at some distance from the hinge pin and arranged to transmit spring forces for exerting a resilient compensation moment on the hinge member in a direction toward its second position, corresponding to the open position of the cover, so as to compensate partly for the force of gravity on the cover.

4,356,595

METHOD AND APPARATUS FOR MOLDING FOOD PATTIES

Glenn A. Sandberg, Lockport; Wilbur Janssen, and Duncan Bachmann, both of New Lenox, all of Ill., assignors to Formax, Inc., Mokena, Ill.

Filed Nov. 7, 1980, Ser. No. 204,840
Int. Cl.³ A22C 7/00
U.S. Cl. 17—45 **13 Claims**



1. A method of molding food patties comprising the following steps performed in a repeating mold cycle:

moving a mold plate having a mold cavity of given surface area from a fill position to a discharge position and back to the fill position, with a fill dwell interval at the fill position;

pumping a moldable food product from a food product supply directly into the mold cavity, under a given maximum fill pressure, through a fill passage having a cross-sectional area immediately adjacent to the mold plate fill position effectively encompassing substantially the entire surface area of the mold cavity, during a portion of the mold plate cycle including the fill dwell interval;

maintaining an intermediate pressure on the food product in the fill passage, comprising no more than a minor fraction of the fill pressure, during a major portion of the transition interval in each mold cycle in which the mold plate moves away from its fill position but a part of the mold cavity remains in communication with the fill passage; and

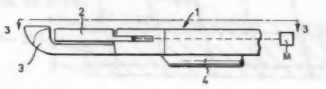
restricting the pressure on the food product in the fill passage to the intermediate pressure or less during the balance of the mold plate cycle, comprising at least about half of that cycle.

4,356,596

FISH CLEANING DEVICE FOR USE ON FISH CLEANING MACHINE

George Gundersen, Madla; Ewald Oien, Krokelvdalen; Ragnar Eide; Palmer Wersland, both of Stavanger; Kristian Borgersen, Hafrsfjord, all of Norway; Paul Kloster, deceased, late of Stavanger, Norway, and by Ketil Johnsen, executor, Madla, Norway, assignors to Trio Engineering Ltd. A/S, Forus, Norway

Filed May 29, 1979, Ser. No. 42,953
Claims priority, application Norway, May 30, 1978, 781875
Int. Cl.³ A22C 25/14
U.S. Cl. 17—58 **7 Claims**



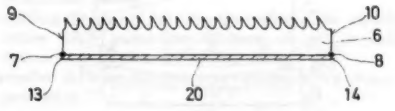
1. A spear-like cleaning device for use on a fish cleaning machine that can be introduced into the belly of the fish through a cut in the throat portion of the fish and along the inside of the belly, the spear-like cleaning device including an elongated shaft, a pair of clamping elements which are each pivotally connected to the free end of said elongated shaft, and means connected to said clamping elements to cause them to pivot towards and away from one another such that once the spear-like device has been inserted into the fish, the clamping elements can be operated such that the intestine of the fish can be gripped and then separated from the belly wall near the outlet opening of the intestine.

4,356,597

CARD CLOTHING INTENDED TO BE MOUNTED TO FLATS OF A CARDING MACHINE

Ralph Graf, Freienbach, Switzerland, assignor to Graf & Cie A.G., Rapperswill, Switzerland

Filed Oct. 10, 1980, Ser. No. 196,284
Claims priority, application Switzerland, Jul. 16, 1980, 5463/80
Int. Cl.³ D01G 15/24, 15/84
U.S. Cl. 19—113 **6 Claims**



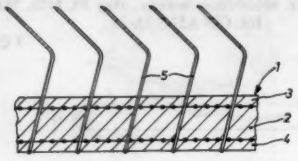
1. A card clothing intended to be mounted to the flats of a carding machine, comprising a plurality of wire sections of equal length provided with teeth and mounted onto a carrier member, wherein said carrier member is an elongated weblike rolled iron profile, and wherein the width of said iron profile equals the length of said wire sections and a plurality of said wire sections is welded by a common weld bead each extending along their ends to the longitudinally extending edge areas of said weblike iron profile, the section of each said wire sections extending intermediate said weld beads abutting directly said weblike iron profile, further wherein said weblike iron profile carrier member is mounted onto a further rolled iron profile having a bracket-like cross-sectional shape including a base section and two leg sections extending laterally thereto, which said leg sections are each connected via a curvilinear section to said base section, and wherein the longitudinal edges of said weblike carrier member are aligned each with the outer surfaces of said leg sections.

4,356,598

CARD SUPPORT FOR CARDING LAYER

Ralph Graf, Freienbach, Switzerland, assignor to Graf & Cie A.G., Rapperswill, Switzerland

Filed Mar. 25, 1980, Ser. No. 133,805
Claims priority, application Switzerland, Apr. 20, 1979, 3778/79
Int. Cl.³ D01G 15/86
U.S. Cl. 19—114 3 Claims



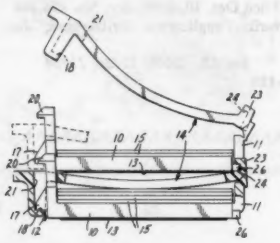
1. An improved card support for carding layers, comprising a base body fabricated from a solid resilient plastic, first and second fabric reinforcing layers embedded adjacent a top surface thereof and the second of said fabric reinforcing layers embedded adjacent the other surface thereof, and a plurality of wire teeth extending through said base body and said fabric layers for support thereby, said teeth being anchored in said support by said resilient plastic material and by loops in said fabric to minimize deflection of said teeth and increase the recuperative capacity of said teeth during operation.

4,356,599

STACKABLE FLAT CABLE CLAMP

Roderick W. Larson, and Dean K. Reidt, both of Saint Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 19, 1980, Ser. No. 218,056
Int. Cl.³ B65D 63/00
U.S. Cl. 24—16 PB 4 Claims



1. A one piece, plastic, stackable, flat cable clamp comprising:

a flat base,

a pair of end walls extending from opposite ends of said base in the same direction from and perpendicular to said base,

a cover hinged on a first of said end walls to fold over and extend across said base in its closed position, and

resiliently deformable means in the space between said base and the furthest spaced portion of said cover in its closed position, said means being resiliently deformable by a plurality of flat cables between said base and said cover;

said cover and the second of said end walls being complementarily formed with means for latching said cover in its closed position over said base to retain flat cables between said base and said cover,

a portion of said second end wall extending further from said base than said cover in its closed position, and

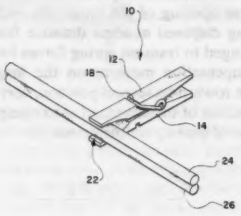
said base, said cover and said extended portion of said second end wall being complementarily formed with means for retaining a second identical flat cable clamp with its base on the cover of the first cable clamp in its closed position.

4,356,600

BAG CLOSURE DEVICE

George A. Welch, 602 Danforth Pl., Fayetteville, N.C. 28303

Filed Aug. 25, 1980, Ser. No. 180,668
Int. Cl.³ B65D 77/10; A44B 21/00
U.S. Cl. 24—30.5 R 1 Claim



1. A spring actuated bag closure device for engaging and closing bags such as potato chips and cookie bags, comprising: a pair of straight, overlying but separate, elongated scissor type members disposed adjacent each other and including spring means operatively interconnected intermediately between a closing end and an opposite finger squeezing end for biasing the closing end of said members towards a closed position and wherein said closing end may be opened by pressing the finger squeezing end together so as to overcome said spring means, and wherein said scissor members are identical and when disposed adjacent each other to form said bag closure device the scissor members include opposed outer flat sides that extend from said closing end to said finger squeezing end; a concave shaped mouth area defined between and interiorly of said scissor members about the closing end thereof, and wherein said mouth includes generally arcuately shaped upper and lower roof areas that form inside portions of said scissor members about the closing end and which extend throughout the closing end of said scissor members; said spring means for holding said scissor type members together and biasing the same for closing including a torsional type clothespin spring interposed between and intermediate the ends of the respective scissor type members and wherein said torsional spring includes two end portions that engage opposite outer areas of the respective scissor type members for biasing said mouth towards a closed position; and a pair of elongated bag closure means secured within said mouth and interiorly of said scissor members such that portions of said scissor type members extend over and beyond said bag closure member for movement therewith, said elongated bag closure members extending substantially from the mouth defined by said scissor type members and generally perpendicular to said scissor members and aligned such that in a closed position, said two elongated closure members move together to grip a substantial length of an open portion of a bag therebetween to close the same.

4,356,601

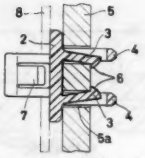
PLASTIC FASTENER

Shigeru Kimura, Kamakura, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Jul. 9, 1980, Ser. No. 167,128
Claims priority, application Japan, Jul. 16, 1979, 54-96748[U]
Int. Cl.³ F16B 19/00; A44B 17/00
U.S. Cl. 24—297 5 Claims

1. A plastic fastener adapted for insertion through one or a pair of openings in a basal object and comprising in combination: a support plate; a pair of spaced apart fixing legs inte-

grally molded with said support plate so as to protrude from one surface of said support plate, each said fixing leg being provided on the free end thereof with a laterally protruding engaging claw; a pair of protecting frames provided integrally on said support plate, each frame having frame side portions extending from the support plate and a frame end portion connecting the frame side portions at the free ends thereof embracing the two sides and the free end of one of said fixing legs; said engaging claws protruding from the open surfaces of



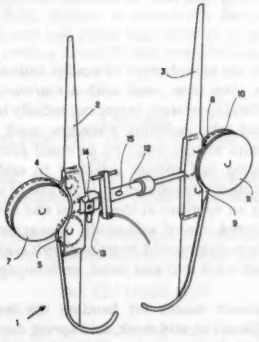
said protective frames; said protective frames having the frame end portions entirely spaced from each other at the free ends of the frames adapting the same for insertion through one or a pair of openings in a given basal object and the respective fixing legs being sufficiently elastic to yield during insertion, and thereafter said laterally protruding engaging claws grippingly engaging respective adjacent edges of said opening; said protective frames preventing said engaging claws from releasing their engagement with the adjacent edges of the opening due to any external forces applied to said fastener.

4,356,602

STRETCHER FOR KNITTED FABRICS

Daniel Heliot, La Chapelle Saint Luc, France, assignor to Etablissements Maurise Heliot SA, La Chapelle Saint Luc, France

Filed Oct. 23, 1979, Ser. No. 87,348
Claims priority, application France, Oct. 22, 1979, 79 26131
Int. Cl.³ D06C *5/00*
U.S. Cl. 26—84 **9 Claims**



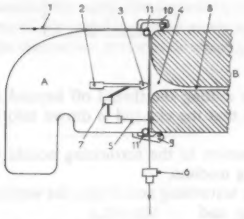
9. A stretcher for tubular knitted fabric for mounting onto a calender comprising two stretcher arms, positioning rollers, said stretcher arms each carrying said positioning rollers, driven supplier rollers cooperating with said positioning rollers for pulling up the knitted fabric and making it pass about said stretcher, a jack for connecting both stretcher arms at their median area and for adjustment of the spreading of said stretcher, a feeding source for the jack and means for selectively feeding compressed air to the jack from the feeding source through the knitting passing about the stretcher, to facilitate selected positioning of the positioning rollers, said jack further comprising a uni-directional locking means whereby the jack may increase the spacing of the arms of the stretcher and any reverse motion is prevented from occurring, said locking means remaining locked as long as there is no pressure other than a predetermined threshold inside the jack.

4,356,603

METHOD FOR INTRODUCING A YARN INTO A PNEUMATIC YARN TEXTURING MEANS

Bernard Biot, Craponne, and Charles Blanc, Couzon-au-Mont-D'Or, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Continuation of Ser. No. 692,766, Jun. 4, 1976, abandoned. This application Jul. 5, 1977, Ser. No. 812,680
Claims priority, application France, Jun. 6, 1975, 75 17993; Jun. 6, 1975, 75 17994
Int. Cl.³ D02G *1/12, 1/16*
U.S. Cl. 28—255 **7 Claims**



1. A method of introducing at least one yarn into an inlet orifice of a pneumatic yarn texturizing means, said method comprising the steps of:

leading the yarn at a high speed from yarn feed means along a path across the inlet orifice of the yarn texturizing means wherein said path is at right angles to the axis of the orifice;

cutting the yarn downstream of the orifice to form a free end for introduction into the texturizing means;

impinging a highly pressurized stream of fluid on the yarn, the stream of fluid substantially perpendicular to the yarn, while cutting the yarn to propel a portion of the yarn occurring upstream of the free end thereof into the orifice solely under the influence of said pressurized stream;

forming a loop of yarn solely under the influence of said pressurized stream;

propelling the loop of yarn into the orifice of the texturizing means solely under the influence of said pressurized stream with the free end trailing; and

thereafter drawing the yarn into the texturizing means for processing.

4,356,604

PROCESS FOR THREADING UP A RAPIDLY TRAVELLING THREAD IN A TEXTURIZING NOZZLE

Wolfgang Martin; Hans Knopp, both of Ludwigshafen; Dieter Herion, Frankenthal; Gerhard Conzelmann, Otterstadt; Guenter Leuchtmann, Mannheim, all of Fed. Rep. of Germany; Peter Gujer, Winterthur, Switzerland; Dieter Guldenfels, Dinhard, Switzerland, and Armin Wirz, Ossingen, Switzerland, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 25,173, Mar. 29, 1979, Pat. No. 4,280,260. This application Jan. 30, 1981, Ser. No. 230,355
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817478
Int. Cl.³ D02G *1/12*
U.S. Cl. 28—255 **2 Claims**

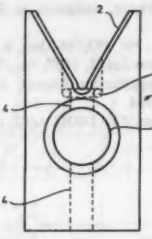
1. A process for introducing at least one thread into a fluid-jet texturizing nozzle, comprising:

enlarging the cross-section of a thread inlet orifice of the

texturizing nozzle compared to the cross-section in steady state operation prior to introduction of the thread,

bringing the texturizing nozzle into a position in which the thread is at least approximately at right angles to the axis of the enlarged thread inlet orifice in the immediately vicinity of the texturizing nozzle,

sucking the thread against the enlarged thread inlet orifice of the texturizing nozzle,



immediately cutting the thread off beyond the texturizing nozzle so that the cut end is drawn into the texturizing nozzle,

replacing suction to the texturizing nozzle by pressurized texturizing medium,

bringing the texturizing nozzle into the working position for texturizing, and

reducing the cross-section of the thread inlet orifice of the texturizing nozzle to a value advantageous for steady state operation.

4,356,605

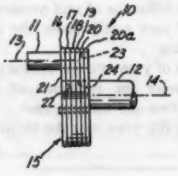
CRANKSHAFT WITH LAMINATED COUNTERWEIGHT

Robert G. Everts, 2301 W. Colt Rd., Chandler, Ariz. 85224

Division of Ser. No. 946,216, Sep. 27, 1978, abandoned. This application Jun. 25, 1980, Ser. No. 163,110

Int. Cl.³ B23K *11/26*

U.S. Cl. 29—6 **1 Claim**



1. A method for making a crankshaft with a laminated counterweight, comprising:

(a) in a metal sheet forming an index hole, and a first and a second hole;

(b) using said index hole, locating the sheet, and then sizing or burnishing said first and second holes;

(c) with said index hole, locating the sheet, and then punching a boss on one side of the sheet and punching a coaxially aligned depression in the other side of the sheet, and spaced from said holes, said boss projecting as a stud from and integral with said one side, said depression and said boss being peripherally bounded by geometrically similar walls which extend normally to the sides of said sheet, the bottom of said depression being located between said sides at a spacing from the side from which said boss projects, whereby to leave a substantial shear web between said two sides, between the bottom of said depression and the base of said boss;

(d) blanking out a part of said sheet which includes said first and second holes, to form a plate;

(e) assembling a stack of identical such plates, and pressing them together so a boss of each plate fits into a depression of its neighboring plate, making a net or tighter fit; and

(f) pressing a first shaft into said first holes, and pressing a second shaft into said second holes.

4,356,606

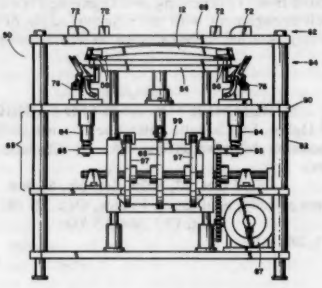
SHADOW MASK INSERTER APPARATUS AND METHOD

Lawrence W. Dougherty, Sleepy Hollow, and William H. Meyle, Naperville, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 29, 1980, Ser. No. 191,887

Int. Cl.³ H01J *9/02*

U.S. Cl. 29—25.15 **5 Claims**



1. For use in the manufacture of a color cathode ray picture tube having a glass face panel with a rearwardly extending flange and a plurality of studs extending radially inwardly from said flange, said tube including a shadow mask suspended in precise proximity to said panel by an equal plurality of rearwardly extending leaf springs attached to said mask in an orientation substantially parallel with the axis of said tube, said springs having an aperture at their distal end for engagement with an associated one of said studs, engagement means for each spring for engaging said apertures with said studs during insertion of said mask into said panel, each engagement means comprising:

spring depressor means for bending the associated leaf spring adjacent to said mask, said spring depressor means including channel means parallel with said leaf spring for accepting the distal end of said spring;

V-groove tip means at a distal end of said spring depressor means and aligned with said channel means for locating and aligning said stud with said channel means;

pusher means for pushing said distal end of said leaf spring along said channel means toward and over said stud during mask insertion;

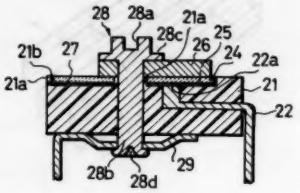
such that as the distal ends of said springs are pushed over said studs, said apertures, being aligned with said studs by said channel means positively snap into substantial engagement with said studs, providing consistent and unequivocal mutual engagement of said mask with said panel.

4,356,607

METHOD OF PRODUCING TRIMMER CAPACITORS

Takashi Shirakawa, Morioka, and Hiroshi Izumi, Tamayama, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1980, Ser. No. 174,227
Claims priority, application Japan, Aug. 1, 1979, 54-98267
Int. Cl.³ H01G 5/06
U.S. Cl. 29—25.42 5 Claims



1. A method of producing a trimmer capacitor of a type having a stator electrode, a ceramic dielectric body, a rotor electrode, and an insulating frame on which said stator electrode, ceramic dielectric body and said rotor electrode are mounted in layers, said rotor electrode being carried rotatably relatively to said stator electrode; said method comprising the steps of:

forming said insulating frame by means of insert molding in such a manner that a portion of a metallic stator lead member is exposed from and flush with the upper surface of said insulating frame;

plating said portion of said stator lead member exposed from the upper surface of said insulating frame with a metal having a low melting point;

applying an adhesive to the upper surface of said insulating frame;

placing a ceramic dielectric body provided at its lower side with a stator electrode on said adhesive applied to said insulating frame;

applying heat and pressure to melt said metal having a low melting point thereby to electrically connect said stator electrode and said stator lead member to each other; and

effecting a cooling to solidfy said metal having a low melting point and said adhesive.

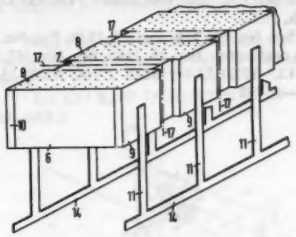
4,356,608

METHOD FOR THE MANUFACTURE OF LAYER CAPACITORS

Reinhard Behn, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,466
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940337
Int. Cl.³ H01G 4/30
U.S. Cl. 29—25.42 7 Claims

1. A method for manufacturing layer or film capacitors, comprising the steps of: providing an insulating plate having metal layers on opposite sides thereof; creating metal-free strip zones which are parallel to one another in the metal layers on the insulating plate such that adjacent metal strips are formed on the two sides of the insulating plate; providing strip-shaped carriers by cutting the plate in a direction intersecting the metal-free strip zones so that opposite connection surfaces are created on the carrier strips together with cut surfaces; applying vapor-deposited metal coating layers and glow polymerization layers on the cut surfaces of the strip-shaped carriers such that each of the coating layers alternately overlaps one of the glow polymerization layers and such that the coating layers of respective polarities are respectively electrically conductively connected to the respective one connection surface; bonding connection elements to the connection surfaces; encapsulating the carrier strips on all sides with insulating material; opening-up the individual capacitors of the carrier strips by applying a voltage thereto: testing the individual capacitors of the carrier



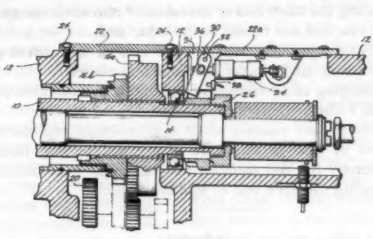
strips; and separating the individual capacitors from the carrier strip in the area of the metal-free strip zones in such manner that none of the connection surfaces or coating layers are cut or exposed.

4,356,609

SPINDLE KEYLOCK

Kenneth A. Wollermann, Dousman, Wis., assignor to Kearney & Trecker Corporation, Milwaukee, Wis.

Filed Dec. 12, 1980, Ser. No. 215,911
Int. Cl.³ B23Q 5/20
U.S. Cl. 29—48.5 R 6 Claims



1. For use with a machine tool having a spindlehead into which a rotatably driven tool carrying a spindle is journaled, apparatus for stopping and locking the spindle at a predetermined angular orientation with respect to a fixed plane passing through the spindle axis in alignment with the spindle key comprising:

a collar fastened about said spindle for co-joint rotation therewith, said collar having an exterior cammed surface in which is inscribed an axially extending slot;

cam follower means pivotally mounted to the machine tool spindlehead and lying within a plane passing through the spindle axis which is at a predetermined angular orientation with respect to said fixed plane, said cam follower means being rotatable about an axis perpendicular to the axis of the spindle for following the cammed surface on said collar; and

actuating means fastened to said spindlehead and coupled to said cam follower means for urging said cam follower means against the cammed surface of said collar so that said cam follower means will follow the cammed surface of said collar and engage the slot in said collar to stop and lock the spindle in the predetermined angular orientation.

4,356,610

METHOD OF MANUFACTURING CATHETER FOR MEASURING INTRAUTERINE PRESSURE OR THE LIKE

Edward H. Hon, Bradbury, Calif., and Carmelo Dali, Cheshire, Conn., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 896,774, Apr. 17, 1978, Pat. No. 4,252,131. This application Jun. 23, 1980, Ser. No. 162,309

Int. Cl.³ B21D *53/00*; B21K *29/00*; B23P *15/26*

U.S. Cl. 29—157 R **3 Claims**

1. A method of manufacturing a tubular catheter for use in measuring intrauterine pressure or the like, comprising

sealing one end of said catheter with a pressure transmitting diaphragm,

inserting the other end of the catheter into an envelope open at one end and closed at the other end,

applying a vacuum to the open end of said envelope to evacuate air from the envelope and catheter,

submerging said evacuated envelope with said other end of the catheter therein in liquid, and

removing said vacuum while said envelope and said other end of said catheter are submerged in said liquid to thereby fill said catheter and envelope with liquid, and sealing the open end of said envelope.

4,356,611

METHOD OF FABRICATING VAPOR-LIQUID CONTACT GRID

Gilbert K. Chen; Paul M. Nyberg, and Matthew Buchholz, all of Wichita, Kans., assignors to Koch Engineering Company, Inc., Wichita, Kans.

Division of Ser. No. 95,296, Nov. 19, 1979, Pat. No. 4,276,242. This application Sep. 4, 1980, Ser. No. 184,141

Int. Cl.³ B21D *53/00*; B21K *29/00*; B23P *15/26*

U.S. Cl. 29—157 R **13 Claims**

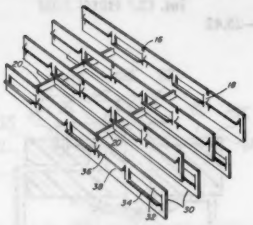
1. A method of fabricating a vapor-liquid grid element for use in a vapor-liquid contact apparatus, which method comprises:

(a) providing a thin, narrow, strip material of defined length and width;

(b) making a plurality of generally long, longitudinal cuts in the strip material, with short, supporting, noncut rib sections therebetween, and making generally short, transverse cuts at each end of the longitudinal cuts, to form a plurality of cut sections in the strip material;

(c) bending the strip material, along each side of the cut section generally parallel to the longitudinal cut and to each end of the transverse cuts in each cut section, generally outwardly on either side of the strip material, to form a pair of outward vane elements extending from each cut section;

(d) making a plurality of open slots extending generally inwardly a short distance from each edge of the strip material in the area of the noncut rib section; and



(e) inserting thin, upright, connector elements in the open slots of the grid elements, to hold the grid elements in a spaced relationship and to form a vapor-liquid contact grid having a plurality of layers of grid elements spaced apart by connector elements.

4,356,612

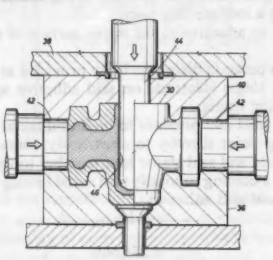
METHOD OF PRODUCING A FORGED PRODUCT

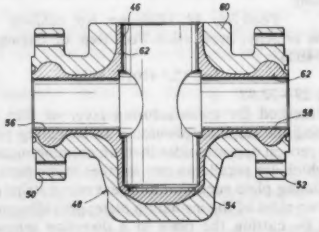
James R. Becker, and Edward L. Raymond, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Mar. 31, 1980, Ser. No. 135,486

Int. Cl.³ B23P *15/00, 13/00*; B21D *31/06, 51/00*

U.S. Cl. 29—157.1 R **16 Claims**





1. The method of producing a metallic body having a plurality of intersecting cavities lined with a corrosion resistant metal material including the steps of

securing a bar of corrosion resistant material within a metallic tube to form a bimetallic billet,

processing the billet in a series of forging steps to the desired shape, whereby said tube is formed to said body with a plurality of intersecting cavities and said bar is formed

simultaneously to line all of said cavities with a passage formed in at least one cavity

and

machining at least another one passage in said body to form a body with lined intersecting passages,

the size of the corrosion resistant bar in said billet being sufficiently large to line the cavities of the metallic body with enough material to permit said machining step.

4,356,613

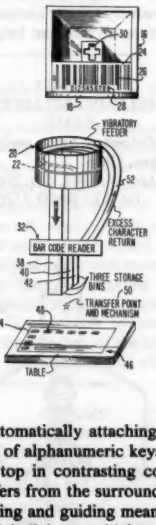
KEY TOP FOR AUTOMATIC ASSEMBLY FOR KEYBOARD APPARATUS

Edward I. Nelson, Sunrise, Fla., assignor to Burroughs Corporation, Orlando, Fla.

Filed Apr. 15, 1981, Ser. No. 254,519

Int. Cl.³ B23Q *15/013, 17/00*

U.S. Cl. 29—407 **10 Claims**



1. A method of automatically attaching indicia coded key tops to the key stems of alphanumeric keys comprising;

a. Forming a key top in contrasting colors such that the indicia color differs from the surrounding color,

b. Providing orienting and guiding means for each key top,

c. Applying coded indicia to said key top indicating the information/data carried by said key tops,

d. Providing feeding means for said key tops including means for receiving said key tops in random order and for orienting said key tops rightside up for serial feeding,

e. Providing one or more correctly oriented key stems in position for receiving respective key tops,

f. Selectively matching an individual key top with a respective key stem,

g. Transferring a selected key top from said feeding means to a respective key stem in accordance with the selective matching step, and

h. Returning unwanted key tops to said feeding means for further handling.

4,356,614

METHOD FOR THE PRODUCTION OF COMPOUND PLATES, PARTICULARLY COMPOUND GLASS PANES

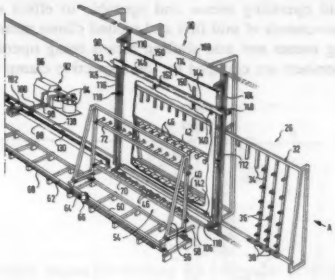
Josef Käuferle, deceased, late of Aichach, Fed. Rep. of Germany (by Viktoria Käuferle, heiress and legal representative), and Werner Lutzke, Friedberg, Fed. Rep. of Germany, assignors to Josef Käuferle KG Stahlbau, Aichach, Fed. Rep. of Germany

Filed Feb. 12, 1980, Ser. No. 120,919

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905841

Int. Cl.³ B23P *15/00;* **B21D** *35/00*

U.S. Cl. 29—469.5 **5 Claims**



1. Method of producing compound plates, such as compound glass panes, including at least two individual plates disposed in spaced parallel relation opposite one another and a frame section located between and extending along the edges of the plates with the frame section connecting the plates together, wherein the improvement comprises that the formation of the frame includes the steps of removing a continuous elongated flat strip from a supply source and moving it to a bending station, bending the continuous flat strip in the bending station along bending lines extending in the elongated direction of the strip into the form of a continuous elongated hollow section, at least by the time the strip is located within the bending station forming miter cuts at locations spaced apart along the elongated direction of the strip with the miter cuts separating the continuous strip into connected subsections, determining the spacing between the cuts in correspondence to the long dimensions of the edges of the plates, mechanically bending in a substantially vertical plane the continuously connected subsections of the hollow section at the miter cuts by guiding the leading end of the hollow section within a vertical guide thereby forming the hollow section into a closed sided frame with the sides of the frame defined between adjacent miter cuts so that upon completion of the mechanical bending the closed sided frame lies in a substantially vertical plane in the region of an assembly station where the plates are to be combined with the completed frame to form the compound plates, separating the trailing end of the trailing subsection from the following continuous hollow section before closing the frame, and maintaining the closed frame at the assembly station and moving individual plates into alignment with the opposite faces of the frame and placing the plates into contact with the frame while the frame is maintained in an approximately vertical position.

4,356,615

APPARATUS AND METHODS FOR USE IN WELDING

Timothy C. Dearman, P.O. Box 937, Pearland, Tex. 77581

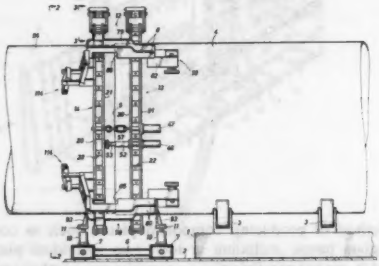
Filed Apr. 17, 1980, Ser. No. 141,051

Int. Cl.³ B23P *11/00, 19/02, 19/04;* **B23K** *37/04*

U.S. Cl. 29—525 **28 Claims**

1. Apparatus for use in welding a first member having a free end of generally cylindrical configuration to a second member

having a free end of generally cylindrical configuration, said apparatus comprising first annular clamp means for encircling and clamping one of said members adjacent its free end; second annular clamp means substantially coaxial with said first clamp means for encircling and clamping said second member adjacent its free end; means mounting said first and second clamp means in axially spaced, substantially parallel relation such that the free ends of said members may lie adjacent and confront one another, said mounting means enabling relative axial, transverse, and rocking movements of said first and second clamp means; operating means reacting between and with said first and second clamp means and operable to effect said rocking and axial movements; and shifting means independent of said operating means and operable to effect said transverse movements of said first and second clamp means, said operating means and said shifting means being operable while said members are clamped by the respective clamp means.



24. A method of aligning for welding a pair of generally cylindrical members end-to-end, said method comprising supporting said members adjacent one another in substantially coaxial relation with their adjacent ends in confronting, axially spaced relation; applying a radial clamping force to one of said members adjacent its end; applying a radial clamping force to the other of said members adjacent its end; applying on one of said members axially directed force operable selectively to rock and axially move said one of said members and position the confronting ends of said members substantially parallel to one another; applying on one of said members a radial force independent of said axially directed force and said clamping force to effect relative transverse movement of said members; and maintaining the clamping forces on said members during the relative axial, rocking, and transverse movements thereof.

4,356,616

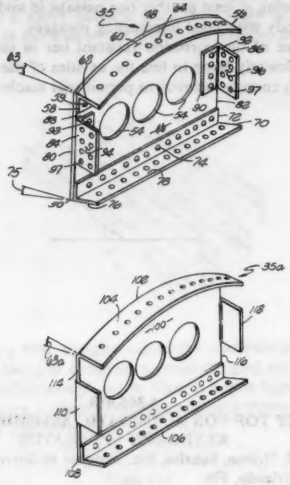
METHOD OF MAKING RIB STRUCTURES FOR AN AIRFOIL

Harry A. Scott, Hawthorne, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 25, 1980, Ser. No. 124,196
Int. Cl.³ B23P *17/00*; B64C *3/18*
U.S. Cl. 29—526 A **8 Claims**

1. A method of fabricating a plurality of rib structures for at least a segment of an airfoil which has both a spanwise taper in thickness and at least one aerodynamic surface having a substantially constant radius of curvature in the chordwise direction, said airfoil having said plurality of rib structures at discrete spanwise locations, comprising the steps of:

forming a plurality of rib webs having upper and lower edges, first and second ends, and of a size at least as large as the largest web of said plurality of rib structures, said upper edges conforming to the radius of curvature of said segment; and



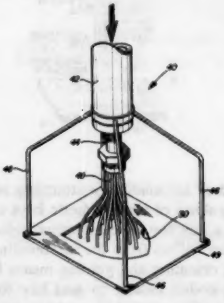
trimming said lower edge of each of said plurality of rib webs in progressively greater amounts to form said plurality of rib structures to different heights.

4,356,617

DECORATIVE EMBLEMS AND METHOD FOR MAKING SAME

Charles M. Coscia, Columbus, Ohio, assignor to The D. L. Auld Company, Columbus, Ohio

Filed Mar. 16, 1981, Ser. No. 244,505
Int. Cl.³ B05D *1/26*
U.S. Cl. 29—527.4 **12 Claims**



1. A method for producing decorative emblem inserts having a thin lens cap over an indicia-bearing foil shape, comprising:

(a) providing a series of foil shapes, each shape having an indicia-bearing upper surface, a bottom surface, and sharply defined peripheral edges around the area over which said lens cap is to be formed and said bottom surface carrying an adhesive,

(b) holding said foil shapes flat and horizontal on a supported surface,

(c) depositing individual measured amounts of clear viscous

fluent plastic onto each of said foil shapes on said indicia-bearing top surface from a plurality of closely spaced orifices overlying essentially the entire surface of said foil shape so that the plastic deposits from said orifices meld together and flow to said sharply defined peripheral edges of said foil shape and form a positive meniscus, and

(d) curing said plastic while maintaining said substrate flat and horizontal, whereby said cured plastic forms a thin lens cap over each foil shape which gives a lens effect to said indicia-bearing top surface.

4,356,618

PRODUCTION OF ROLLED PRODUCTS

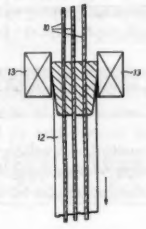
Richard M. Jordan, Hook Norton, England, assignor to Alcan Research and Development Limited, Montreal, Canada

Filed Oct. 30, 1979, Ser. No. 89,396

Claims priority, application United Kingdom, Nov. 3, 1978, 43105/78

Int. Cl.³ B22D *11/00, 19/00, 11/126*

U.S. Cl. 29—527.6 **6 Claims**



1. A method of making a composite metal sheet or plate comprising producing an ingot in a direct chill casting mould by a direct chill casting technique and simultaneously lowering into the mould a plurality of spaced parallel plates made from a metal having a higher melting point than the continuously cast metal, the side edges of said plates being covered by the cast metal, and terminating the flow of cast metal into the mould only after the top edges of the plates have become submerged in the cast metal in the mould, whereby the plates are completely submerged in the cast metal and, after the cast metal has solidified to form a composite ingot, reducing the thickness of the composite ingot in a direction normal to the general plane of the core sheets by hot rolling the ingot thereby to complete the bonding of the metal of the plates to the cast metal and to form the sheet or plate.

4,356,619

CUT AND CLINCH HEAD ASSEMBLY

Michael D. Snyder, Chenango Bridge, N.Y., and Henry J. Soth, Brackney, Pa., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed May 12, 1980, Ser. No. 148,836

Int. Cl.³ B23P *19/00;* **H05K** *3/30*

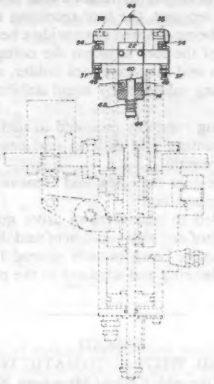
U.S. Cl. 29—566.3 **5 Claims**

1. In an apparatus for cutting component leads projecting beneath a printed circuit board to form scrap portions and remaining portions and for clinching said remaining portions to the underside of said printed circuit board, and having a head assembly adapted to engage with said underside of said printed circuit board and to receive said leads for cutting and clinching, and having an actuator means for transmitting a cut and clinch function drive, the improvement comprising:

a housing supporting cutter-former means and anvil means for cooperatively receiving and cutting said leads and for clinching said remaining portions to said underside;

said cutter-former means, pivotal between an open position and a closed position, having a first cutter surface adapted to engage said leads during cutting of said leads;

said anvil means, pivotal between a receive position and a detect position, having a second cutting surface adapted to engage said leads and cooperate with said cutter-former means during said cut and clinch function; and



adjustable limiter means for limiting the amount of pivoting of said anvil means to said receive position, said limiter means comprising an adjustable eccentric means for engaging said anvil means to adjustably limit the amount of pivoting of said anvil means toward said receive position.

4,356,620

DISK MAGAZINE TOOL HOLDER

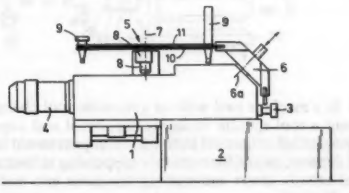
Werner Babel, Pfronten-Meilingen, and Willi Krug, Gudensberg, both of Fed. Rep. of Germany, assignors to Maho Werkzeugmaschinenbau Babel & Co., Pfronten/Allgau, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,169

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1979, 2927823

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 **16 Claims**



1. A magazine tool holder for machine tools of the milling and drilling type, said machine tool having a headstock, the tools used by said machine tool being formed with a peripheral collar, said tool holder comprising:

a low-mass disk mounted horizontally above the headstock and comprising:

a first thin flat plate formed with a plurality of angularly spaced radial tool receiving recesses in the periphery thereof;

a second thin flat plate formed with a like plurality of angularly spaced radial tool receiving recesses in the periphery thereof;

means for securing said first and second plates together in spaced confronting relationship with said respective tool receiving recesses in registration, the space be-

tween said plates being adapted to radially receive the collar of the tools which said tool holder is adapted to engage;

said second plate being annular in shape and being formed with Geneva drive means as one portion of a Geneva drive mechanism;

means mounted to one of said plates adapted to engage and radially releasably retain a tool in each of said tool receiving recesses, the tool receiving recesses of each said plate being adapted to provide a bearing surface for the shaft of the tool adjacent the collar for stability of the tool in said magazine tool holder, said bearing surfaces having substantially equal stabilizing effect upon the tool;

a central bearing rotatably mounted to said machine tool;

means for mounting said disk to said central bearing for rotation therewith;

a Geneva drive gear engaging said Geneva drive means on said second plate; and

a motor coupled to said Geneva drive gear for selective rotation thereof and step rotation of said disk, said Geneva drive mechanism being radially spaced from the axis of said central bearing and adjacent to the periphery of said disk.

4,356,621

MACHINE TOOL WITH AUTOMATIC TOOL CHANGE

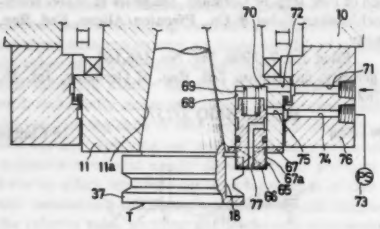
Tamaki Tomita, Okazaki; Kenichi Munekata, Kariya; Fumihiko Ohkoshi, Anjo, and Toshifumi Hasegawa, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 15, 1980, Ser. No. 216,833

Claims priority, application Japan, Jul. 25, 1980, 55-103237; Oct. 29, 1980, 55-151640

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 **10 Claims**



1. In a machine tool with an automatic tool change function having a tool spindle rotatably supported and capable of receiving a tool at one end thereof, the improvement comprising:

tool support means for rotatably supporting at least one tool to selectively insert and remove the same into and from said tool spindle;

a movable key movably guided in said spindle and having a width smaller than that of a key-way formed on said tool;

means for urging said movable key beyond the one end of said spindle;

first control means responsive to a tool change command for rotating said spindle at a predetermined speed permitting key-engagement;

operating means for causing relative movement between said tool support means and said spindle for a tool change operation with said spindle being rotated at the predetermined speed;

detecting means for detecting movement of said movable key to confirm engagement of said movable key with the key-way of said tool;

clamp means responsive to said detecting means for clamping said tool inserted into said spindle;

second control means for rendering said first control means inoperative and for rotating said spindle at a commanded machining speed after said tool is clamped relative to said spindle.

4,356,622

METHOD OF PRODUCING LOW-RESISTANCE DIFFUSED REGIONS IN IC MOS SEMICONDUCTOR CIRCUITS IN SILICON-GATE TECHNOLOGY METAL SILICIDE LAYER FORMATION

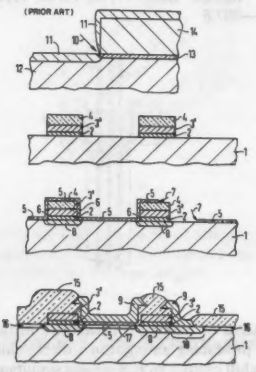
Dietrich Widmann, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 157,495

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926874

Int. Cl.³ H01L *21/225, 21/283*

U.S. Cl. 29—571 **9 Claims**



1. A method of producing relatively low-resistance diffused regions useful as current-supply paths in integrated MOS semiconductor circuits in silicon-gate technology wherein sheet resistance of such regions is reduced by formation of a metal silicide layer comprising, in combination, the sequential steps:

(a) depositing a doped polysilicon layer of a given conductivity type on a monocrystalline silicon substrate of a conductivity type opposite to that of said given conductivity type;

(b) depositing a layer of a metal which forms a silicide onto said polysilicon layer and converting a zone of such polycrystalline layer which lies relatively close to its surface into a metal silicide layer;

(c) depositing a silicon dioxide layer onto the entire structure surface;

(d) structuring the resultant SiO_2-metal silicide-polycrystalline silicon triple layer in such a manner that regions of said monocrystalline substrate which are to form the low-resistance diffused regions remain covered;

(e) producing a gate oxide via thermal oxidation and substantially simultaneously generating said low-resistance diffused regions in said monocrystalline substrate;

(f) etching contact holes to said diffused regions of said monocrystalline substrate;

(g) depositing a layer of undoped polysilicon on the entire structure surface;

(h) locally oxidizing said undoped polysilicon layer via a nitride mask which covers gate regions and contact holes to said low-resistivity diffused regions;

(i) doping said undoped polysilicon layer with a dopant of said given conductivity type; and

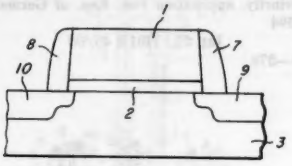
(j) generating metal paths for completion of said circuit.

4,356,623

FABRICATION OF SUBMICRON SEMICONDUCTOR DEVICES

William R. Hunter, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 15, 1980, Ser. No. 187,642
Int. Cl.³ H01L *21/22, 21/26*
U.S. Cl. 29—571 25 Claims



1. A method for fabricating a semiconductor device comprising the steps of:

a. forming a conductor layer on the surface of a semiconductor substrate of one polarity between areas where regions of opposite polarity from said substrate are to be formed in said substrate,

b. partially forming said regions of opposite polarity,

c. forming vertical layers adjacent to said conductor layer,

d. forming extensions of said regions of opposite polarity partially defined by said vertical layers, said extensions having the same polarity as said regions partially defined by said vertical layers, and

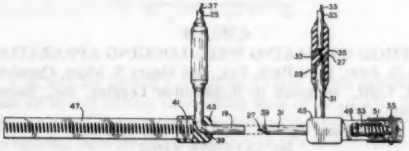
e. forming contacts on said extensions.

4,356,624

FABRICATION TECHNIQUES FOR TUBULAR SHEATHED HEATERS

Don A. Coverstone, Larwill, and Larry G. Harris, North Webster, both of Ind., assignors to Lyall Electric, Inc., Albion, Ind.

Filed Aug. 7, 1980, Ser. No. 176,109
Int. Cl.³ H05B *3/00*
U.S. Cl. 29—611 8 Claims



1. The method of making an electric heater assembly for encircling a hermetic compressor housing comprising the steps of:

selecting a sheathed tubular heating element of a length of the same order of magnitude as the circumference of the housing;

attaching electrical lead wires to the selected element;

bending the selected element near one end thereof;

juxtaposing one end of an elongated tensioning member and the element bend; and

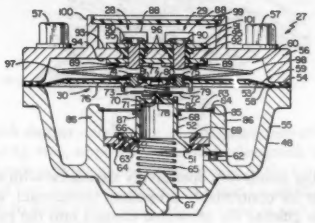
molding a mass of non-metallic material about the element bend and a portion of the tensioning member to join the member to the selected element.

4,356,625

FLUID FLOW SENSING SWITCH DEVICE—METHOD OF MAKING

Roy C. Demi, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 936,113, Aug. 23, 1978, Pat. No. 4,242,083.
This application Sep. 12, 1980, Ser. No. 186,698
The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.
Int. Cl.³ H01H *11/00*
U.S. Cl. 29—622 16 Claims



1. In a method of making a fluid flow sensing switch device having a housing means provided with a fluid flow passage therethrough defined by an inlet and an outlet separated by a valve seat controlled by a movable valve member that is operated by the pressure differential between said inlet and said outlet acting on a flexible diaphragm carried by said housing means, said device having an electrical switch construction operatively associated with said valve member and having contact means thereof disposed in said fluid flow passage so as to be exposed to fluid flow therethrough and being actuated by said pressure differential acting on said flexible diaphragm, the improvement comprising the steps of forming said contact means as a pair of spaced apart contacts, and mounting said pair of contacts on said flexible diaphragm and pivotally positioning a bridging contact member on said valve member so as to be pivotally mounted thereon and being positioned in spaced apart relation to said pair of contacts to make contact with said pair of contacts and thereby bridge said pair of contacts to close said switch construction upon actuation of said switch construction.

4,356,626

APPARATUS FOR AUTOMATICALLY INSERTING AN ELECTRICAL CONTACT INTO AN ELECTRICAL CONNECTOR

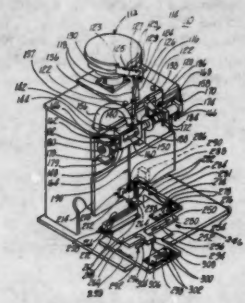
Robert D. Waghorn, Oneonta, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 99,776, Dec. 3, 1979, Pat. No. 4,312,125.
This application Mar. 19, 1981, Ser. No. 245,295
Int. Cl.³ H23P *19/00*
U.S. Cl. 29—747 16 Claims

1. An apparatus for automatically inserting an electrical contact of the type having a retention portion into an electrical connector adapted to retain the contact in a cavity of the connector by a contact retention mechanism, including guide means (52) extending from a contact loading position to a contact unloading position adjacent the connector for guiding the contact in a forward direction from the loading position to the cavity of the connector, and wherein the improvement comprises:

said guide means includes a slide rod (162) having a contact receiving passage (176) and mounted for axial reciproca-

tion between the contact loading position and contact unloading positions, and



propelling means (30) operatively associated with said guide means for controllably propelling the contact, said guide means guiding the propelled contact into the cavity.

4,356,627

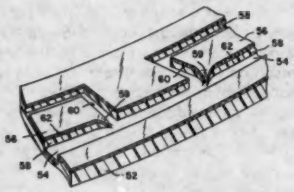
METHOD OF MAKING CIRCUIT PATH CONDUCTORS IN PLURAL PLANES

Norman E. Hoffman, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 118,129, Feb. 4, 1980. This application Jun. 1, 1981, Ser. No. 270,704

Int. Cl.³ H01K 3/00

U.S. Cl. 29—849 2 Claims



1. A method for forming circuit path conductors along plural planes, comprising the steps of:

adhering a conductive layer onto a substrate of dielectric having the characteristic, in response to the application of pressure, of forming a permanent indentation with an abruptly sloped periphery,

indenting the assembly of said conductive layer and said substrate with an impression die the face of which includes projecting portions and recessed portions defining a pattern of circuit paths,

dividing first portions of said conductive layer from second portions thereof alone lines of shear formed by penetration of said projecting portions of said die pattern through said conductive layer,

forming recess portions with abruptly sloped peripheries along said lines of shear formed by penetration of said die pattern into the surface and thickness of said substrate,

insetting said first portions of said conductive layer in said recess portions, separating and electrically isolating said first portions from said second portions of said conductive layer along the abruptly sloped peripheries of said recess portions, and

selectively forming transition portions of said conductive layer between certain ones of said first portions and certain ones of said second portions thereby interconnecting these certain ones of said first and second portions together.

4,356,628

METHOD TO RENDER ACCESSIBLE AN ELECTRICAL CONTACT REGION OF A COMPOSITE ELEMENT

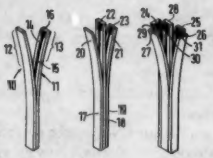
Klaus Müller, Tamm; Karl-Hermann Friese, Leonberg, and Gerhard Holfelder, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 193,187

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1979, 2940394

Int. Cl.³ H01R 43/00

U.S. Cl. 29—878 9 Claims



1. Method of forming a readily accessible contact region on a composite plate-like element having

a first plate-like body (11, 11/2, 19, 24, 25) defining a major plane and having a terminal connecting portion (13, 13/1, 21, 41);

an additional plate-like body (10, 17, 26, 27) positioned in contact with, or closely adjacent to said first plate-like body,

at least one of said bodies (11, 11/2, 19, 24, 25) being of ceramic material

including the step of

sintering said at least one body, and

wherein, in accordance with the invention, the sintering step includes the step of

applying a bending force to the terminal connecting portion (13, 13/1, 21, 41) of said at least one ceramic body (11, 11/2, 19, 24, 25) while said body, during sintering, is in plastically deformable condition, in a direction to bend said body, and the contact region (16, 16/1, 23, 29, 31) thereon away from its major plane such that the contact region of said terminal connecting portion of said body is located relative to the center of the bend on the remote surface of the bent body;

and uniting said bodies in a separate connecting step to form said composite element, with the terminal connecting portion of said at least one body, upon cooling, being spread apart from the other body, or bodies, and retaining said spreadapart position.

4,356,629

METHOD OF MAKING WELL LOGGING APPARATUS

John D. Jeter, Iowa Park, Tex., and Henry S. More, Carmichael, Calif., assignors to Exploration Logging, Inc., Sacramento, Calif.

Filed Apr. 21, 1980, Ser. No. 141,769

Int. Cl.³ H01R 43/00

U.S. Cl. 29—885 4 Claims

1. A method for making an electrode assembly adapted to slide on and off a drill string to be used in a well for measuring electrical resistivity of earth formations traversed by the well, the method including the steps of:

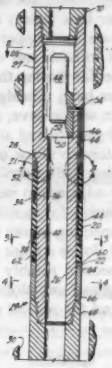
(a) forming a sleeve of insulating material by wrapping resin-coated fibers around an elongated and generally cylindrical mandrel, the mandrel having an exterior surface which converges toward one end so the sleeve is formed with an internal converging surface matching the external surface of the mandrel;

(b) embedding at least one electrical conductor in the sleeve;

(c) forming a recess in the outer surface of the sleeve to expose the embedded electrical conductor in the vicinity of the recess;

(d) depositing metal within the recess to at least partially fill it and make electrical contact with at least part of the exposed electrical conductor;

(e) curing the resin while the fibers are wrapped around the mandrel; and



(f) thereafter slipping the sleeve from the mandrel and thereafter slipping the sleeve onto a drill string having an external surface matching that of the mandrel.

4,356,630

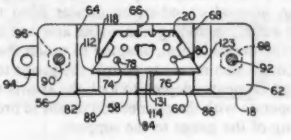
CABLE SLITTING TOOL

Ray T. David, 6806 Kildare Dr., Cincinnati, Ohio 45238

Filed May 6, 1981, Ser. No. 261,253

Int. Cl.³ B21F *13/00*

U.S. Cl. 30—90.4 **3 Claims**



1. A tool for slitting a casing of a cable which comprises a pair of holder halves, there being slots in the holder halves along a part line between the holder halves, the slots forming an opening between the holder halves of a size to receive the cable for movement axially through the opening, a knife blade having a cutting edge and mounted between the holder halves with a corner portion of the knife blade at one end of the cutting edge extending from an edge of the opening transversely of the opening a sufficient distance to slit the casing of the cable without penetrating conductors of the cable as the cable is advanced along the opening in a slitting direction, a second edge of the knife blade extending from said corner portion at an angle to the cutting edge; said second edge being engageable with the cable to urge the cable against a side of the opening away from the knife blade as the cable is advanced through the opening in a direction opposite to the slitting direction after the casing has been slit and means for holding the holder halves and the knife blade in assembled relation.

4,356,631

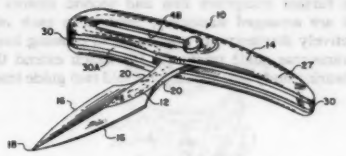
FOLDABLE PUSH DAGGER

Kenneth W. Guth, Box 252A, Saddlewood Dr., Maple Park, Ill. 60151

Filed Oct. 15, 1980, Ser. No. 197,282

Int. Cl.³ B26B *1/04*

U.S. Cl. 30—154 **18 Claims**



1. A push dagger comprising an elongated, movable, dagger blade having two, oppositely disposed, elongated, sharpened edges extending along a substantial portion of the length of said blade, said two edges converging at a first longitudinal end of said blade to form a sharpened dagger point at said first longitudinal end of said blade,

an elongated dagger handle having first and second, oppositely disposed longitudinal ends, said blade having a fully opened position in which at least a portion of said blade is disposed exteriorly of said handle and a different fully closed position in which at least a major portion of said blade is disposed within said handle, and

means disposed at a second longitudinal end of said blade opposite from said first longitudinal end of said blade for interconnecting said blade and said handle and for enabling relative movement between said blade and said handle along the length of said handle during the movement of said blade from said fully opened position to said fully closed position, said second longitudinal end of said blade being disposed at a first longitudinal end of said handle when said blade is in said fully closed position and being disposed along the length of said handle at a position intermediate said first and second longitudinal ends of said handle when said blade is in said fully opened position,

said interconnecting means comprising manually engageable means for moving said blade and for releasably securing said blade in its fully opened position,

said manually engageable means including a movable locking member movable relative to said blade and having an outer peripheral configuration,

said handle including interlocking means for releasably receiving and securely retaining said locking member in engagement therewith when said blade is in its fully opened position,

said interlocking means having an inner peripheral configuration complementarily shaped to said outer peripheral configuration of said locking member to prevent substantial relative movement between said blade and said handle when said blade is in its fully opened position.

4,356,632

WRITING APPARATUS

Gerold Anderka, Holsteinner Chaussee, Fed. Rep. of Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed May 28, 1980, Ser. No. 154,163

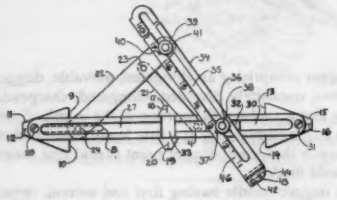
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2923499

Int. Cl.³ B43L *13/02*

U.S. Cl. 33—18 R **6 Claims**

1. In a program-controlled lettering and drawing device of the type having a control unit connected by an electrical cable to an operating unit which comprises a housing having a keyboard for choosing the symbols to be written and a writing part, the improvement wherein said writing part comprises a

writing pen which extends exteriorly of said housing and is movable by a writing arm over a space external to a longitudinal edge of said housing and also between a rest position and a writing position, wherein said writing part further comprises motor means mounted inside said housing selectively to move said pen over said space in longitudinal and transverse coordinate directions to correspond to symbols there to be drawn, wherein said housing further comprises means for an attachment to the symbol head of a drafting machine, and said motor means further comprises first and second motors (15, 25), which are arranged stationary, relative to each other, and respectively drivingly are connected to crossing longitudinal and transverse guide tracks (6, 16) which extend through a slide bearing body (28) which joins said two guide tracks in the



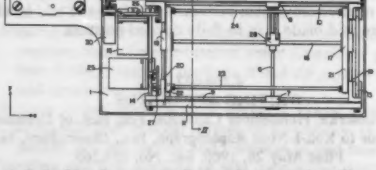
area where they cross, wherein said writing arm (4) is attached at a proximate end to said slide bearing body and extends transversely to a distal end where said writing pen (5) is held, said arm being movable transversely by said second motor (25) along a first movable guide track (6) that itself is movable in the longitudinal coordinate direction by said first motor (15), wherein said arm is movable longitudinally by said first motor (15) over a second guide track (16) that itself is movable in the transverse direction by said second motor (25), wherein further said arm is supported by and transversely slideable within a guide bearing (8) that is slideably engaged for longitudinal movement upon a slide rail (10) which is situated longitudinally with respect to the transverse extension of the writing arm (4), wherein said guide bearing is disposed between the proximate and distal ends of said arm.

4,356,633

ELLIPSOGRAPH

Marian Poll, 1271 Northwest Hwy., Park Ridge, Ill. 60068

Filed Jul. 27, 1981, Ser. No. 286,774
Int. Cl.³ B43L *11/04*
U.S. Cl. 33—31 **1 Claim**



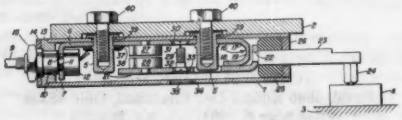
1. A drafting instrument for tracing an entire ellipse, or parts thereof, comprising a lower base with a first and second end and center, each of said ends bearing mounting lugs and a center line indicator, with another center line indicator on each side of the base at its center, the upper surface of said lower base having a groove from a point adjacent to the first end to a point adjacent to the center, a rotary arm whose first end is pivotally connected to the upper surface adjacent to the second end of said lower base, an elongated plate whose first end is mounted by connecting means to said groove so as to permit linear motion of said end along said groove, with the second end of said plate carrying an upwardly projected shaft, said plate being pivotally connected to the second end of the rotary arm at a predetermined point so that as the first end of the plate travels along the groove the upwardly projected shaft moves on a straight line along the center line indicator at the center of said lower base, an upper base rigidly affixed at both ends to the ends of the lower base, said upper base having a groove between points adjacent to each end with the center of said groove lying on the same line joining the center line indicators on the ends of the lower base, a bridge bearing reciprocally slideably mounted within said groove, said upper base having a gap orthogonal to said groove and at its center portion, the gap of sufficient dimensions to allow unobstructed motion of the upperwardly projecting shaft, a scribe arm having a lengthwise slot between points adjacent to each end, said scribe arm having at its first end means for mounting a drafting instrument, a first rotably connecting means between the upwardly projecting shaft and said slot as a point near the second end of said scribe arm, and a second rotably connecting means between the bridge bearing and said slot at a point between the first connecting means and the second end of said scribe arm.

4,356,634

GAUGE FOR CHECKING GEOMETRICAL LINEAR DIMENSIONS OF MECHANICAL PIECES

Mario Possati, 40125 Viale Carducci, 23 Bologna, Italy

Filed Oct. 27, 1980, Ser. No. 201,222
Claims priority, application Italy, Oct. 29, 1979, 3528 A/79; Jul. 22, 1980, 3476 A/80
Int. Cl.³ G01B *7/02*
U.S. Cl. 33—169 R **20 Claims**



1. A gauge for checking geometrical linear dimensions of mechanical pieces, comprising an outer casing with walls defining an internal chamber; an armset fixed to the outer casing, the armset including a movable arm and a feeler, supported by the movable arm, adapted to touch the piece to be checked; connection means to couple the gauge to an external support; and elements adapted to lock the armset to the casing and to cooperate with the connection means in order to enable the coupling of the gauge to the support.

4,356,635

CENTERING DEVICE

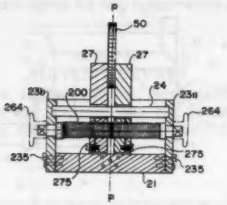
Hun Hwei Chung, No. 2-16, Lane 81, Chung Shen Rd., Feng Yuan, Taiwan

Filed Dec. 24, 1980, Ser. No. 219,989
Int. Cl.³ B27G *23/00*
U.S. Cl. 33—185 R **3 Claims**

1. A centering device for use in a tool machine having a horizontal spindle wherein a circular milling cutter is mounted for cutting a cylindrical workpiece, comprising:

an aligning fixture having a base provided with an elongated channel along a longitudinal center line, a pair of holding blocks slidably disposed in said channel of said base, said holding blocks mounted on a leadscrew capable of moving said pair of holding blocks towards each other to meet at a center position of said base when said leadscrew is turned in one direction and each moving apart an equal distance from said center position of said base when said leadscrew is turned in the opposite direction each of said

holding blocks being provided with a cut-in and a lock screw adapted to lock the holding block on said leadscrew when said lock screw is tightened, an arm firmly fixed onto one side of said base, said arm having a center line perpendicular to said longitudinal center line of said base and passing through said center position of said base; and



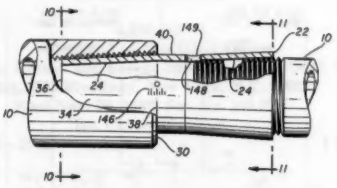
a centering pointer having a needle slidably held within a hollow holder and resiliently urged outwardly by a spring in said hollow holder, said needle being provided with a lever perpendicularly fixed thereto and capable of moving with said needle, said centering pointer being mounted onto said arm in said aligning fixture with said needle passing through and being perpendicular to said center line of said arm.

4,356,636

GAUGE FOR TAPERED THREADED BOX AND PIN ENDS OF A JOINT

Royce G. Roberts, P.O. Box 1296, Kenai, Ak. 99611

Filed Oct. 17, 1980, Ser. No. 197,896
Int. Cl.³ G01B *3/36*
U.S. Cl. 33—199 R **12 Claims**



1. In a fluid conductor joint having a tapered threaded pin end opposed to a tapered threaded box end, the threads of which commence at a terminal end and terminate at a vanish point; the combination with said joint of a thread gauge for determining the acceptable limits of the length, mean diameter, and taper of the threads of said pin and box ends;

said thread gauge includes a main body having a small diameter end spaced from a large diameter marginal end portion thereof, with there being a circumferentially extending boss formed at said large diameter marginal end portion;

a tapered surface in the form of a frustum of a cone located between said large and small diameter portions; the surface of the cone has a taper made complementary respective to the optimum taper of the threaded joint;

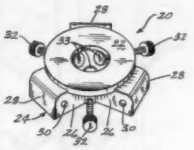
and means for measuring the relative position of the mean diameter of the threaded surface with respect to the mean diameter of the tapered surface of the gauge.

4,356,637

DEVICE FOR HOLDING A SURVEYOR'S RANGE POLE

George W. Hall, 3200 Viking Dr., Sioux City, Iowa 51104

Continuation-in-part of Ser. No. 97,193, Nov. 26, 1979, which is a continuation-in-part of Ser. No. 953,704, Oct. 23, 1978, Pat. No. 4,192,076. This application Mar. 2, 1981, Ser. No. 238,150
Int. Cl.³ G01C *15/08*
U.S. Cl. 33—296 **5 Claims**



1. A device for holding a surveyor's range pole comprising:

a tripod base having vertically lengthwise adjustable legs, the top ends of which form an apex of said base

a support plate connected to the apex of said tripod base, said plate having a vertical opening extending therethrough for reception of a range pole which will extend to the ground;

a plurality of adjustable screws threadably attached to said plate at a plurality of spaced apart points around said opening for threadable adjustment in a radial direction toward and away from the center of said opening, said screws having flattened inward ends, whereby said screws can be threadably moved into retentive engagement with said range pole when said range pole extends through said opening; and

a reception means connected to the top ends of said legs of said tripod base, said reception means comprising a three of channels connected to the under surface of said plate and positioned in circumferentially spaced relation to one another around said opening in said plate, each of said upper ends of said legs beig pivotally secured to one of said channels for pivotal movement about a horizontal axis said three channel members connected to one another and said adjustable screws being threadably attached at the junctions between said channel members.

4,356,638

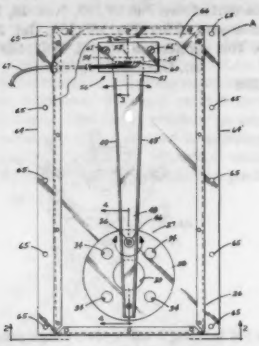
LIFT TRUCK DIGITAL INCLINOMETER

William F. McKenna, Loves Park, and Gerry A. Cwienkala, West Dundee, both of Ill., assignors to Leveling Devices, Inc., Aurora, Ill.

PCT No. PCT/US80/01470, § 371 Date Oct. 22, 1980, § 102(e) Date Oct. 22, 1980, PCT Pub. No. WO82/01412, PCT Pub. Date Apr. 29, 1982
PCT Filed Oct. 22, 1980, Ser. No. 265,991
Int. Cl.³ G01C *9/06*
U.S. Cl. 33—333 **21 Claims**

1. Apparatus for displaying inclination from vertical of a lift truck mast or other vehicle structure, said apparatus comprising an inclination sensor module carried by said mast and an inclination display module remote from said mast for displaying to an operator the inclination of said mast, and characterized by said sensor module including a mass for inertially establishing a true vertical gravitational plumb line, means for pivotally securing said mass by providing a pivot axis extending through said mass for permitting pivoted movement thereof with respect to said mast with a minimized total period of oscillation, means for optically detecting the position of said mass relative to said mast, and means for converting the optically detected position to electronic signals to produce en-

coded signals, said display module comprising a display device responsive to said encoded signals providing display of the



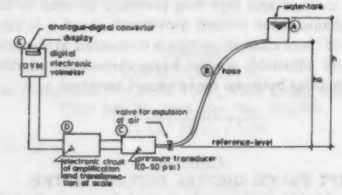
actual degrees and increments of degrees of inclination of said mast referenced to said vertical plumb line.

4,356,639

COMPACT PORTABLE DIGITAL MULTIMETER FOR INSTANTANEOUS MEASURING OF HEIGHT DIFFERENCES INDEPENDENTLY OF VISIBILITY

Jorge Alarcon Opazo, Freire No. 551, Rancagua, Chile

Filed Oct. 10, 1980, Ser. No. 195,936
Claims priority, application Chile, Aug. 8, 1980, 572-80
Int. Cl.³ G01C *5/04*
U.S. Cl. 33—367 **4 Claims**



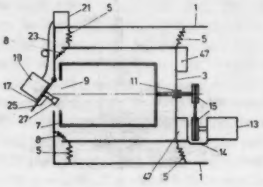
1. A device for instantaneous and exact measurement of height differences and topographical leveling in conditions of difficult visibility as in the night, fog, high thermal refraction of the atmosphere, galleries, tunnels and underground passages of mines, in fields with obstacles such as slopes, etc, said device comprising a single small portable water tank to be placed at a location the height of which is to be measured, said water tank being open to atmospheric pressure, a pressure transducer to be placed at a reference location, a single hose connecting said tank with said pressure transducer, valve means for expulsion of air from said hose, said pressure transducer comprising an elastic diaphragm subjected to hydrostatic pressure transmitted by said hose and a strain gauge bridge coupled with said diaphragm to generate a voltage signal proportional to pressure, and electronic circuit means for amplifying and displaying said voltage signal, said circuit means comprising an operational amplifier for amplifying said voltage signal and digital voltmeter for displaying the amplified signal, said digital voltmeter being calibrated to read in terms of height of location to be measured.

4,356,640

METHOD OF DRYING CLOTHES AND HEATING UP LAUNDRY WATER AND APPARATUS THEREFOR

Christian Jansson, Rötelstr. 24, 6300 Zug, Switzerland

Filed Jan. 19, 1981, Ser. No. 266,459
Claims priority, application Switzerland, Jul. 2, 1980, 5107/80
Int. Cl.³ F26B *3/34*
U.S. Cl. 34—1 **12 Claims**



1. Apparatus for drying wet laundry or heating laundry water, comprising:

a drum suspended in a resiliently supported laundry housing and driven by a power unit;

said drum including an opening for loading laundry;

said drum including a radiation passage on one of its surfaces;

a source of radiation energy for directing said radiation energy through said radiation passage to the contents of said drum; and

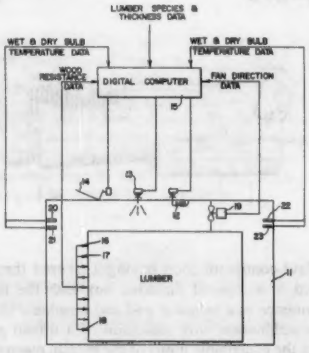
said radiation source being mounted on said laundry housing as a compensation weight.

4,356,641

KILN CONTROL SYSTEM

Clifford M. Rosenau, Willow Street, Pa., assignor to Armstrong World Industries, Lancaster, Pa.

Filed Dec. 15, 1980, Ser. No. 216,557
Int. Cl.³ F26B *21/08*
U.S. Cl. 34—46 **9 Claims**



1. In a kiln for drying lumber having temperature control means and humidity control means each being responsive to applied control signals, temperature sensors producing signals representing the dry and wet bulb temperatures in said kiln, and a control system comprising:

at least one moisture sensor embedded in said lumber; and

a digital computer having:

means responsive to the output of said moisture sensor for producing a digital signal representing rate of change of moisture content in said lumber;

means for comparing said signal representing rate of change with a desired preset rate of change of moisture content;

means responsive to the aforesaid comparison for periodically updating a wet bulb set point, so that said rate of change of moisture content is maintained approximately constant;

means responsive to said wet bulb set point to produce said applied control signals for said humidity control means; and

means responsive to said dry bulb set point to produce said applied control signal for said temperature control means.

4,356,642

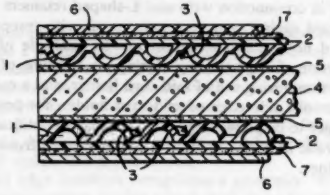
SUPPORT DEVICE

Shephard Herman, 12 Radcliffe Rd., Newton, Mass. 02168

Filed Aug. 27, 1980, Ser. No. 181,880

Int. Cl.³ A43B *13/38*; B32B *5/18*

U.S. Cl. 36—44 **14 Claims**



1. A support device resistant to bottoming out of laminar construction comprising:

a layer of flexible, open cell foam;

at least one air pocket layer over said open cell foam comprising air pockets entrapped between impervious flexible plastic film and said open cell foam; and

a layer of adhesion between said foam and said air pocket layer, binding said foam to said air pocket layer;

whereby, during use, the foam will conform to the surface of the air pocket layer.

13. A cushioned support innersole for footwear comprising a support device of laminar construction according to claim 1.

4,356,643

NON-SLIP FOOTWEAR

Adelbert L. Kester, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Nov. 28, 1980, Ser. No. 211,079

Int. Cl.³ A43B *23/28*

U.S. Cl. 36—59 C **1 Claim**

1. A non-slip footwear, comprising in combination a shoe or the like including an upper, a sole and a heel at a bottom thereof, and a matted friction pad affixed under said sole and heel said pad being made of U-shaped strands of nylon stiff fibers woven through a backing liner affixed to said sole and heel and lower ends of said fibers, extending downward wherein an underside of said sole and heel to which said friction pad is affixed, are contoured with cleats said pad being similary contoured when mounted on said sole and heel presenting a contoured fiber surface for contact with a walking surface and wherein said pad fits between said cleats to interlock therewith.

4,356,644

ROOT GRUBBING PLOW

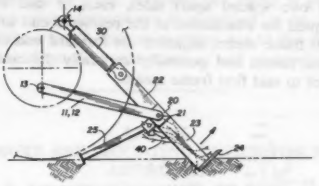
Travis O. Harkness, Rte. 1, Box 95-A, Kaufman, Tex. 75142

Continuation-in-part of Ser. No. 201,543, Oct. 28, 1980. This application Jan. 30, 1981, Ser. No. 230,005

The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.

Int. Cl.³ A01B *13/00*; A01G *23/06*

U.S. Cl. 37—2 R **13 Claims**



1. A grubbing plow for extraction of vegetation from soil, said plow being mounted to a vehicle by a 3-point hitch having two lower arms and an upper attachment point, said grubbing plow including means enabling the extraction of vegetation from the soil while said vehicle is maintained stationary, comprising:

(a) a frame having a horizontal pivot bar journaled at opposite ends thereof on said lower arms and having an upper member and a lower member, said pivot bar being pivotally mounted for rotational movement about a horizontal axis, said upper and lower members being aligned and oppositely directed from said pivot bar;

(b) a knife-edged, V-shaped blade rigidly attached to the lower end of said lower member and lying in a plane perpendicular to the length of said lower member;

(c) a double acting hydraulic cylinder connected between said upper attachment point and the upper end of said upper member for forcibly swinging said blade in an arc around the axis of said pivot bar, said double acting hydraulic cylinder moving said blade between a first position within the soil for engaging the vegetation to be grubbed through said arc to a second position for lifting and removing the vegetation from the soil, such that the vegetation is extracted from the soil by operation of said hydraulic cylinder swinging said blade through said arc while the vehicle is maintained stationary; and

(d) a force transmitting member including a leg member pivotally mounted to said frame and extending away from said frame for providing contact with the ground on the opposite side of said frame from which said blade extends for transmitting a portion of the reaction forces generated by said blade when said blade travels in an arc around the axis of said pivot bar.

4,356,645

VARIABLE WING PLOW BLADE AND MOUNTING STRUCTURE THEREFOR

Gordon Hine, Logan, Utah, and Robert D. Mathis, Canoga Park, Calif., assignors to De Lorean Manufacturing Company, Bloomfield Hills, Mich.

Continuation of Ser. No. 916,613, Jun. 19, 1978, Pat. No. 4,249,323. This application May 19, 1980, Ser. No. 151,461

The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.

Int. Cl.³ E01H *5/06*

U.S. Cl. 37—281 **9 Claims**

1. A variable wing plow blade and mounting structure therefor comprising,

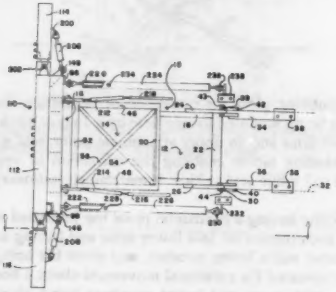
a variable wing plow blade having a center blade and a pair of wing blades each of which is connected at one end by a generally vertical hinge to a respectively associated end of said center blade and is provided with a rearwardly

extending first pivot arm from an intermediate position thereof, said center blade including a separate rearwardly extending second pivot arm adjacent each end thereof,

first and second motor means connected respectively between each of said first pivot arms and an associated one of said second pivot arms for effecting relative angular adjustment of each of said wing blades with respect to said center blade both forwardly and rearwardly with respect to a position of alignment therewith,

first frame means having a forward end and rearward end and two spaced apart sides, each of said sides being adapted for attachment at the rearward end to a vehicle,

second frame means adjacent the forward end of said first frame means and generally vertically disposed with respect to said first frame means,



first connecting means including at least one upper and at least one lower pivot connection position for connecting the forward end of said first frame means generally at said spaced apart sides thereof to the lower end of said second frame means,

means for attaching said center blade of said variable wing plow blade to said second frame means, the attachment being such as to restrain relative movement about any axis that is parallel to the planes of said center blade and said second frame means, and so that force from snow upon said plow blade when said plow blade is attached and said vehicle is used to plow snow is transmitted substantially to said forward end of said first frame means and is distributed between said two spaced apart sides thereof.

4,356,646

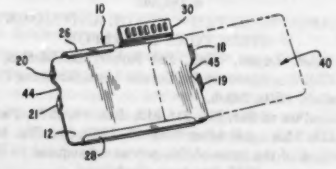
CARD HOLDER

Thomas A. Johnson, Jr., 859 Wabash, Carol Stream, Ill. 60187

Filed Feb. 26, 1981, Ser. No. 238,496

Int. Cl.³ G09F *3/18*; B41L *47/02*

U.S. Cl. 40—16.4 **1 Claim**



1. A card holder for retaining a plastic identification card, said card holder being fabricated of metal and having a back wall of a size substantially corresponding to said card, said card holder having parallel side edges each having integrally formed therewith at least one upstanding stop which is of a height substantially corresponding to the thickness of said card for receiving therebetween the opposite side edges of said card for preventing lateral movement of said card with respect to said card holder,

said card holder further having parallel top and bottom edges each having integrally formed therewith along at least a portion of the length thereof a generally L-shaped retainer having a leg overlying said back wall and forming therewith a slot for receiving therein the opposite top and bottom edges of said card for securing said card in said card holder, the length of the legs of said L-shaped retainers being sufficiently long to overlap and secure the edges of a card and sufficiently short so as to not interfere to any great extent with the area of the card which can be embossed, said top edge further having integrally formed therewith a tab portion extending outwardly of said card holder in a parallel plane which is disposed at a height above said back wall substantially corresponding to the thickness of said card, an edge of said tab portion functioning in conjunction with said L-shaped retainers to secure a card against transverse movement with respect to said card holder, a tab support on the backside of said tab portion, for preventing flexing or bending of said tab portion during use of said card holder, and a cutout in at least one side edge of said card holder, for permitting a finger to be pressed against said plastic identification card to raise its edge to permit it to be removed from said card holder.

4,356,647

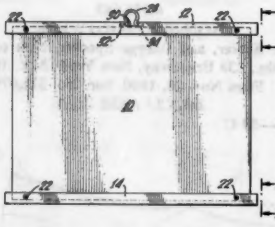
APPARATUS FOR HOLDING AND DISPLAYING A POSTER

William H. Farris, 3505 Alma, Manhattan Beach, Calif. 90266

Filed Apr. 13, 1981, Ser. No. 253,795

Int. Cl.³ G09F *1/12*

U.S. Cl. 40—152.1 **9 Claims**



1. In an apparatus for holding and displaying a poster of a generally flexible material, the combination comprising:

first and second generally identical members, each of said members being formed from an elongate generally rectangular piece of generally rigid yet slightly flexible plastic material bent at the approximate center thereof to form first and second opposing sides defining a longitudinally extending generally V-shaped slot for receiving an edge of the poster therein;

fastening means for urging the free ends of said member adjacent the mouth of said slot toward each other for captively retaining the so-engaged edge of the poster therein; and

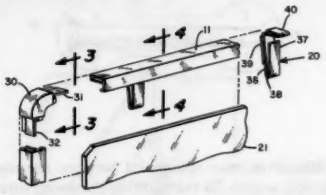
means engaging the V-shaped slot on one of said members for suspending the assembled unit.

4,356,648

FRAMING SYSTEM FOR DISPLAY PANELS

Bryan J. Beaulieu, Burnsville, Minn., assignor to Rupp Industries, Inc., Burnsville, Minn.

Filed May 8, 1981, Ser. No. 261,886
Int. Cl.³ G09F 1/12; A47G 1/06; B25G 3/00
U.S. Cl. 40—155 4 Claims



1. Frame means for releasably retaining and exhibiting objects upon a display surface, said frame means comprising, in continuation with one another, angularly disposed edge members releasably secured together with corner members, and mounting brackets releasably secured to said edge members and having means for releasably mounting said frame means upon a display surface, and a backing pad for objects being exhibited within said frame means;

(a) said edge members comprising a generally "E" shaped channel member having a back with three fingers extending therefrom including inner, outer and intermediate fingers, said outer finger having an in-turned lip adjacent the outer tip thereof, and with a partially enclosed channel formed between said outer and intermediate fingers;

(b) said corner members comprising a central arcuate segment with interlocking tabs extending away from said central arcuate segment, said interlocking tabs including segments of reduced thickness along the length thereof for engagement with said edge member in said partially enclosed channel;

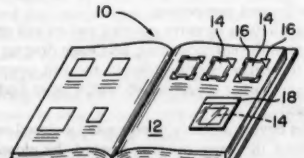
(c) said mounting brackets being in the form of a generally open bilateral triangle with two elongated legs joined together at the apex, and having a first elongated leg with an engagement surface exposed toward said display retaining surface, said second elongated leg being adapted to engage said backing pad at the free end thereof, the third leg of said bilateral triangle consisting of a segment turned upon itself to form a clip means arranged for releasable engagement within said partially enclosed channel.

4,356,649

PAGE CONSTRUCTION FOR A STAMP ALBUM

Maxwell Diamond, and Jack Rose, both of c/o Design Images 71-58 Austin St., Forest Hills, N.Y. 11375

Filed Dec. 15, 1980, Ser. No. 216,613
Int. Cl.³ G09F 1/10
U.S. Cl. 40—159 7 Claims



PRIOR ART

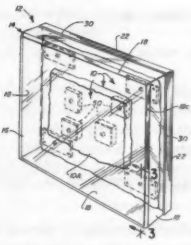
1. An improved page construction for a stamp album comprising a cardboard substrate delineated by a central fold line into a first play and second ply, plural stamp-sized cut-outs in said first ply each having an upper edge, a clear plastic cover adhesively secured in spanning relation across and behind each said cut-out and at a slight distance below said cut-out upper edge to cooperate therewith in bounding an access opening for positioning a stamp behind said plastic cover, an inert surface coating applied on said second ply in select areas coextensive with said cut-out locations when said first and second plies are in superposed relation, and means adhesively securing said first and second plies to each other in a resulting two-ply construction in which each cut-out presents edges bounding a stamp-sized compartment of a recessed depth corresponding to the thickness of said first ply, whereby any stamp in place in a cooperating said compartment is subjected to an optimum minimum direct application of pressure due to the protection thereagainst afforded by said recess of said compartment.

4,356,650

ENCLOSURE AND MOUNTING DEVICE FOR RELIEF ARTWORKS

Raymond L. Antonczyk, Chicago, Ill., and Andrew R. Antonczyk, 1030 N. State, Chicago, Ill. 60610, assignors to Andrew R. Antonczyk, Chicago, Ill.

Filed Jun. 29, 1981, Ser. No. 278,059
Int. Cl.³ G09F 1/10
U.S. Cl. 40—160 3 Claims



1. An enclosure comprising:

a shell having a transparent front plate and sidewalls extending rearwardly from said front plate and partially enclosing an open space at the the rear of said front plate to accommodate a display object therewithin;

re-entrant means on said side walls;

frame means each having front flange means received within said re-entrant means and rear flange means spaced rearwardly from the rearmost surfaces of said sidewalls;

backing means separate from said frame means, extending across said entire open space to complete the enclosure thereof, and received between said sidewalls and said rearmost surfaces of said rear flange means;

and means reacting against said rear flange means to press said backing means against said rearmost surfaces of said sidewalls.

4,356,651

ROTATABLE NOTE HOLDER

William R. Barlow, 4102 - 109th St., S.W., #24, Tacoma, Wash. 98499

Filed Sep. 9, 1980, Ser. No. 185,423
Int. Cl.³ G09F 21/00; A44B 21/00; B62D 39/00
U.S. Cl. 40—308 2 Claims

1. A rotatable note holder for shopping carts for items such as coupons comprising:

a surface capable of supporting paper;

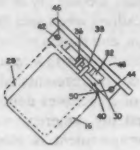
a means for attaching pieces of paper to the surface;

a cylindrical chamber including a lengthwise cutout;

a ledge built up on one side of the cutout;

a bar slidably positioned within the chamber;

a rod affixed at approximately right angles to the bar, the rod passing through the cutout to attach to the bar;



a means for attaching the rod to the supporting surface; and a means for attaching the chamber to the shopping cart.

4,356,652

PICTURE ALBUM

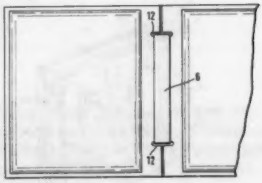
Friedrich C. Schneider, Frühlingstrasse 3, 8032 Gräfelfing, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,535

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949937; Jul. 9, 1980, 3025973

Int. Cl.³ G09F *19/00*

U.S. Cl. 40—530 7 Claims



1. A picture album comprising picture carriers which are formed by flat cells of double-walled plastic film, the flat cells being filled with an elastic material and being joined together by strip-like weld areas which form a folding hinge means, characterised in that each two flat cells are joined by a weld area to form double flat cell arrangements, that there is formed in the weld area of a double flat cell arrangement, an insertion opening which extends in the longitudinal direction of the weld area, for at least one further double flat cell arrangement, and that there is provided in the weld area of the further double flat cell arrangement a respective slot extending inwardly thereof from each of the upper and lower edges whereby a plurality of double flat cell arrangements are adapted to be joined together to constitute a book form by insertion of at least one of the further double flat cell arrangements into the insertion opening.

4,356,653

FIREARM MAGAZINE

Henry P. Swieskowski, Sparta, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 11, 1980, Ser. No. 176,950

Int. Cl.³ F41C *25/04*

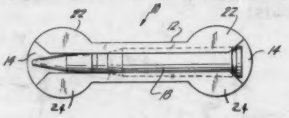
U.S. Cl. 42—50 5 Claims

1. An improved firearm magazine comprising:

(a) a housing having a rectangularly shaped center section, a cylindrical housing section operatively positioned at opposite ends of the rectangular center section forming an integrated magazine tube;

(b) at least one helical spring closely secured within and along the walls of each cylindrical housing section of the magazine tube;

(c) a plurality of rounds axially aligned along a longitudinal axis of said housing, securely engagable in a groove;



(d) a follower member interposed between the rounds and the helical springs for transmitting the spring forces to the rounds and for positioning a top round operatively within said magazine.

4,356,654

TANDEM DRAGNETS

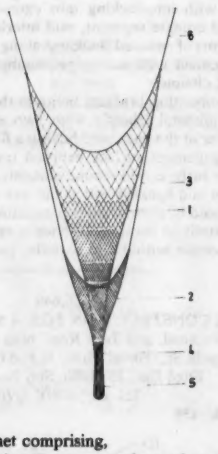
Rainer Trekel, Rostock; Uwe Lorenzen, Warnemünde; Wolfgang Rehme, Rostock; Rolf Dürr, Rostock; Hans G. Litschko, Rostock, and Wilfried Thiele, Rostock, all of German Democratic Rep., assignors to VEB Fischfang Rostock, Rostock, German Democratic Rep.

Filed Aug. 26, 1980, Ser. No. 181,533

Claims priority, application German Democratic Rep., Jul. 18, 1979, 214415

Int. Cl.³ A01K *73/02*

U.S. Cl. 43—9 5 Claims



1. A tandem dragnet comprising,

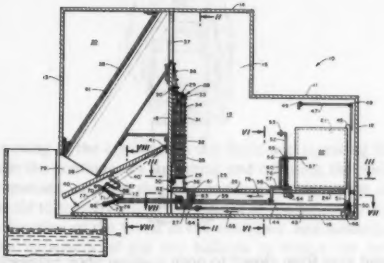
a main dragnet having an entry opening and an exit opening narrower than the entry opening, said main dragnet tapering from the entry opening toward the exit opening to surround and gather together fish which enter said entry opening, and

a rear dragnet having an entry opening and a closed end and tapering from the entry opening toward the closed end, said rear dragnet being disposed behind said main dragnet such that the entry opening of the rear dragnet receives therein the exit opening of the main dragnet substantially concentrically, the entry opening of the rear dragnet being displaced from the rear part of the main dragnet at the point of entry of the main dragnet into the rear dragnet, thereby forming means to recapture fish initially captured by the main dragnet and then escaping from a flank of the main dragnet.

4,356,655
ANIMAL TRAP

Alberto T. Morante, and Roger Morante, both of 12.30 N. St., Sacramento, Calif.

Filed Sep. 2, 1980, Ser. No. 183,267
Int. Cl.³ A01M *23/14*
U.S. Cl. 43—67 12 Claims



1. An animal trap for trapping and disposing of an animal comprising:

an enclosed housing;

an entrance leading into said housing;

a normally opened door closing off said entrance selectively movable between a first position opening said entrance and a second position closing off said entrance to thus provide or prevent access into the interior of said housing;

a partition wall dividing the interior of said housing into first and second compartments, said first compartment communicating with said entrance;

a bait holder removably mounted on said partition wall on the side thereof in said first compartment;

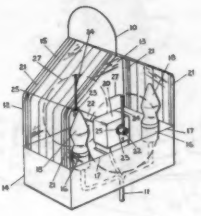
a first weight-actuated actuating means in said first compartment adjacent said bait holder and remote from said door for actuating said door to close said entrance when a predetermined weight is placed on said first weight-actuated actuating means;

access means communicating said first compartment with said second compartment, said access means being accessible by the animal and having a first portion having means thereon preventing reversal of the path of an animal leading into the interior of said second compartment; including releasable latch means associated with both said door and said housing, said latch means including a latch member extending from said door and a latch on said housing engageable by said latch member having latch member retaining means thereon for retaining said latch member and said releasable latch means also including spring-biased means holding said latch in a first position and elongated means extending from, and connected to, said spring-biased means to a second weight actuated actuating means in said second compartment and actuated thereby to release said latch when said second weight actuated actuating means is moved by the weight of an animal thereon, said elongated means being adapted to release said latch simultaneously with the opening of said door by the engagement of said second weight actuated actuating means with an operatively interassociated first flexible means; and animal disposing means associated with said second compartment communicating with the second portion of said access means for receiving an animal therein.

4,356,656
FLYING INSECT KILLER AND LIGHT FIXTURE INCORPORATING SAME

Gerald W. Tasma, 3617 Colonial, NE., Grand Rapids, Mich. 49505

Continuation of Ser. No. 958,430, Nov. 7, 1978, Pat. No. 4,251,945, which is a continuation-in-part of Ser. No. 854,360, Nov. 23, 1977, abandoned. This application Dec. 12, 1980, Ser. No. 215,715
The portion of the term of this patent subsequent to Feb. 24, 1981, has been disclaimed.
Int. Cl.³ A01M *1/04*
U.S. Cl. 43—113 17 Claims



1. An insect killer comprising:

a lure medium for attracting flying insects thereto;

a motor with a rotatable shaft;

mounting means for mounting the motor near the lure medium;

at least one lightweight, nonmetallic, freely pliable filament attached at a portion thereof to the rotatable shaft, the filament having a specific gravity less than 2.0;

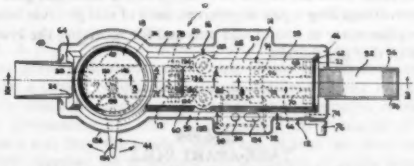
the motor having means to rotate the filament at a speed of 2,000 to 4,000 RPM so that the filament sweeps about a circular area fast enough to be statistically effective in hitting insects flying therethrough, so that wind turbulence is minimized and so that safety for humans is maintained; and

whereby the filament has the ability to kill by impact the insects it hits while rotating at such speeds but is safe from cutting or injuring a limb or finger placed in the circular area swept by the rotating filament.

4,356,657
TOY CAR WASH APPARATUS AND METHOD

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.

Filed Feb. 11, 1981, Ser. No. 233,675
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—12 31 Claims



1. A toy car wash comprising:

(a) means defining an elongated frame having an entrance end and an exit end, and an upper wall;

(b) means on said frame defining a transparent cover at least partially enclosing an elongated car wash area above said upper wall, and forming, with said frame means, an entrance at said entrance end and an exit at said exit end; and

(c) means mounted on said frame within said car wash area

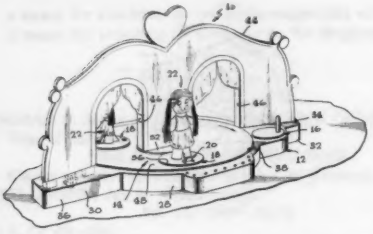
for advancing a toy vehicle along said car wash area, for applying water to the vehicle, and for spinning the wet vehicle to remove water therefrom.

4,356,658

MULTIPLE AND VARIED MOTION STAGE APPARATUS FOR DOLL FIGURE

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356

Filed Feb. 11, 1981, Ser. No. 233,551
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—13 **14 Claims**



1. Revolving stage apparatus for use with a doll figure, comprising:

(a) a frame;

(b) a stage mounted on the frame for rotation about a vertical axis and having an upper surface;

(c) means for effecting rotation of the stage;

(d) a doll support disc mounted on the stage for rotation relative to the stage about a vertical axis;

(e) means on said support disc releasably securing a doll figure to the disc; and

(f) means between said support disc and said frame and operable incident to rotation of said stage to effect rotation of said doll support disc while said stage rotates, said rotation of the doll support disc being successively in opposite directions and through arcs of different degrees; said disc having cam means secured thereon and said base having cam means affixed thereon below the stage and generally aligned with the path of the cam means on the disc follows as the disc rotates with the stage, to thereby effect said rotation; said disc cam means comprising off-center depending pin means and said base cam means comprising complimentary groove means for receiving and retaining said pin means and varying the radial distance of the pin means from the center of rotation of the stage incident to stage rotation; said pin means comprising a pair of depending pins of different configurations, both offset from the center of rotation of the disc, said groove means comprising a pair of grooves, each of said grooves being complimentary to one of said pins and for receiving the lower end of that pin therein.

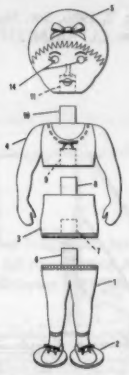
4,356,659

TAKE-APART DOLL

William A. Clarke, 3420 Pine Tree Ter., Erie, Pa. 16506

Filed Apr. 17, 1981, Ser. No. 255,229
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—22 **7 Claims**

1. A toy comprising a plurality of parts constructed to represent features of a doll, releasable connectors between adjoining parts permitting a child to play with the doll by disassembling and reassembling said parts, one of said parts having eyes movable between open and closed positions, and means operatively connected to said eyes for moving said eyes from open to closed position upon disassembly of said parts and for moving said eyes from closed to open position upon reassembly of said parts.



4,356,660

TWIRLING DISC

Kenneth J. O'Brien, 1657 Hawksway Ct., Westlake Village, Calif. 91361

Filed Aug. 10, 1981, Ser. No. 291,782
Int. Cl.³ A63H *17/00*
U.S. Cl. 46—60 **8 Claims**

1. A twirling disc toy adapted for use by either a novice twirler of an expert twirler, said twirling disc comprising:

a rim defining the periphery of said twirling disc;

a pliable material extending across said rim on one face thereof; and

a hard material extending across said rim on the opposite face thereof, said pliable material for contacting the twirling finger of a novice twirler and said hard material of the disc for contacting the finger of an expert twirler.

4,356,661

AEROSTAT AND METHOD OF OPERATION

Mitchell C. Calderwood, 3100 Dover Dr., Boulder, Colo. 80303

Filed Jan. 2, 1981, Ser. No. 221,970
Int. Cl.³ A63H *3/06*
U.S. Cl. 46—74 R **11 Claims**

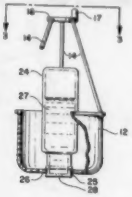
1. A ballast device for controlling the buoyancy of a toy balloon, the device comprising:

a resilient container adapted to contain at least one selected liquid;

an opening defined in the container and of such dimension as to preclude flow of the selected liquid through the opening under normal head pressures resulting from the selected liquid in the container as a result of the surface

tension of the liquid, the dimension being about one sixteenth of an inch across; and

means to attach the ballast device to a toy balloon with the container opening positioned away from the toy balloon; whereby the amount of selected liquid within the resilient container may be precisely adjusted by immersing the



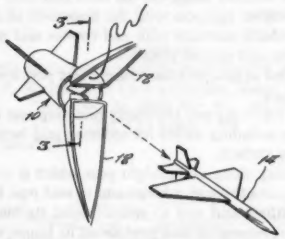
opening of the container in the liquid and ingesting liquid into the container by squeezing and releasing the resilient container, or squeezing the container to dropwise expel liquid to thereby adjust the weight of the ballast device as a function of the liquid in the container, and accordingly the buoyancy of the toy balloon to which the ballast device may be attached.

4,356,662

MODEL ROCKETRY SPLIT NOSE EJECTION

Gene Strasser, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Apr. 8, 1981, Ser. No. 252,077
Int. Cl.³ A63H *27/00, 27/14*
U.S. Cl. 46—74 C 3 Claims



1. A model booster rocket assembly comprising in combination, a booster rocket including a split nose cone consisting of a pair of jaws, each said jaw being pivotable about a pin supported on a body of said rocket, and means including a weight on each said jaw, each said weight being arranged relative to the pivot pin of its associated jaw so that the effect of gravity will spread said jaws apart when said nose cone is tipped over so to point downwardly, and a glider held between said jaws thus being freed for flight.

4,356,663

CRYING DOLL

Rouben T. Terzian, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 8, 1980, Ser. No. 119,823
Int. Cl.³ A63H *3/24*
U.S. Cl. 46—118 17 Claims

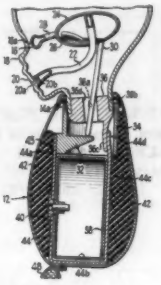
1. An animated doll, comprising:

a hollow body with a hollow head connected at a neck and formed with a face having hair, eyes and a mouth;

a bladder for containing liquid in said head having a flexible wall and conduits in communication between said bladder and openings formed in said eyes for conducting liquid from said bladder to the outer surface of said eyes;

means for forcing liquid from said bladder through said conduit to said outer surface of said eyes;

at least one arm including a hand at the outer end, said hand including means for holding a handkerchief and said arm mounted for movement on said body about an axis adja-



cent a shoulder portion between a first position wherein said hand is adjacent the outer surface of said eye and a second position downwardly therefrom, and

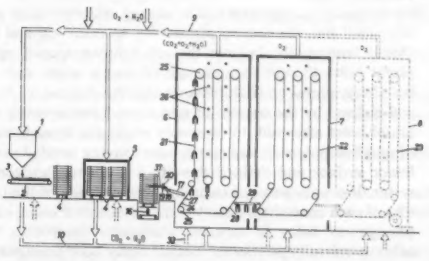
means on said doll remote from said hand for manually controlling rotation of said hand relative to said arm about an axis extending longitudinally of an adjacent portion of said arm.

4,356,664

PLANT FOR THE CONTINUOUS PRODUCTION OF GREEN FORAGE

Othmar Ruthner, Sieveringerstrasse 150, A-1190 Vienna, Austria

Filed Dec. 1, 1980, Ser. No. 211,673
Int. Cl.³ A01G *31/00*
U.S. Cl. 47—65 8 Claims



1. A plant for the continuous production of green forage from germinable seeds, comprising means for mashing said seeds, a closed hopper for holding and for steeping mashed seeds, means for charging the mashed seeds onto trays, at least one germinating chamber for promoting the formation of a rootlet mat from the mashed seeds, and at least one air-conditioned chamber for promoting the formation of green leaves and lateral shoots out of the rootlet mat to thereby form a mass of green forage, means for introducing said trays into said at least one germinating chamber in which the rootlet mat is formed from the seeds, a mass of green forage being formed from said rootlet mat as the same is carried on at least one revolving endless belt through said at least one air-conditioned chamber, a first duct for connecting an inlet of said closed hopper and an inlet of said at least one germinating chamber with an outlet of said at least one air-conditioned chamber for

conducting reactant gases from said at least one air-conditioned chamber into said closed hopper and said at least one germinating chamber, and a second duct for connecting outlets of said closed hopper and said at least one germinating chamber with an inlet of said at least one air-conditioned chamber for conducting gases from said closed hopper and said at least one germinating chamber to said at least one air-conditioned chamber.

4,356,665

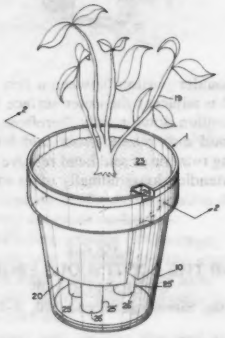
SELF-WATERING PLANTER

Nenzito C. de Oliveira, Estrada Velha de Portao-km. 05, Lauro de Freitas/Bahia-CEP 42.700, Brazil

Filed May 18, 1981, Ser. No. 264,077

Int. Cl.³ A01G *9/02*

U.S. Cl. 47—80 **1 Claim**



1. In the growing of a living plant, apparatus comprising:

(A) a first transparent plant pot having an open top and enclosed bottom;

(B) a second plant pot disposed in nesting relationship to said first plant pot, the second pot having an open top and enclosed bottom, the bottom thereof defining spaced apart plural holes therein for drainage of excess water and for breathing; plural conical ducts, projecting downward from and defined by the bottom of said second pot between the plural holes aforesaid, to terminate above the inner bottom of said first pot, each said conical duct having molded in the lower surface and defined thereby a U-shaped horizontal water flow passageway extending from one side of the bottom of each cone-shaped duct to the other side thereof, each passageway being in random orientation relative to the other, a centrally positioned vertical water flow passageway extending from the lower surface of the cone-shaped duct through the top of the U-shaped horizontal water flow passageway, whereby reservoir fluid may pass freely between the interior of the first pot and the second pot;

(C) a water reservoir defined by the exterior of the second pot and the interior of the first pot;

(D) water input of substantially uniform horizontal cross-section, defined by a vertical side wall of said second pot and the first pot, said input extending from top to bottom of the first pot to permit replenishment of water in said water reservoir without removal of said second pot from the interior of the first pot;

(E) a nutrient soil or soiless growth media disposed inside the second pot, completely filling the conical duct thereof, allowing the passage of reservoir water therethrough, by capillary action.

4,356,666

FLEXIBLE PARKING SPACE BARRIER

Daniel M. Kennedy, III, and Patricia C. Kennedy, both of 10105 Burton Glen Dr., Rockville, Md. 20850

Filed Jul. 10, 1980, Ser. No. 169,112

Int. Cl.³ E05B *65/00*; E06B *11/00*

U.S. Cl. 49—35 **25 Claims**

1. A parking space barrier comprising:

an upright post hinged to a mounting foot in a manner permitting said post to rotate, upon the application of force thereto, in a first direction from a first upright rest position generally perpendicular to a roadway surface to a second position, generally parallel to a roadway surface,

a curved vehicle underside protective member attached to and disposed along a front side of said upright post, said protective member being curved such that only said protective member contacts with the underside of a vehicle when a vehicle contacts with and rotates said post from said first to said second position,

means coupled to said post for biassing said post toward said first position,

a base plate receiving and releasably retaining said foot, said base plate including means for securing said base plate to a roadway surface,

a rod extending along said upright post which is coupled to said base plate through a hinge and to said post in a manner permitting said rod to rotate about its hinge upon rotative movement of said post about its hinge, and,

a locking mechanism coupled to said post and rod comprising a first locking means which, when in a locking position, prevents rotation of said post and rod about their respective hinges to thereby lock said post in said generally perpendicular orientation.

4,356,667

TILT LATCH FOR SLIDABLE WINDOW SASH

Frank Malachowski, Columbia Station, Ohio, assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Aug. 18, 1980, Ser. No. 179,008

Int. Cl.³ E05D *13/00*

U.S. Cl. 49—454 **13 Claims**

12. A window assembly comprising

(a) a window sash having a top and two sides;

(b) a window frame for receiving said sash for sliding vertical movement, said frame having two facing vertical channels respectively extending along the sides of the sash; and

(c) a pair of tilt latches respectively mounted on top of the sash adjacent the two sides thereof for engaging the channels of the frame to retain the sash in the frame, the latches being disengageable from the channels and the sash being

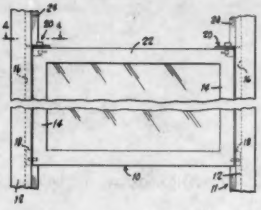
tiltable out of the frame when the latches are thus disengaged;

wherein the improvement comprises:

(d) each of said latches comprising

(i) a base mounted on the top of said sash adjacent one side thereof;

(ii) a body having a free end including a nose insertable in



the window frame channel adjacent the last-mentioned side of said sash; and

(iii) a hinge interconnecting the base and body for enabling angular movement of the body between a closed position in which the body overlies the base with the nose received in the last-mentioned frame channel, and an open position in which the nose is clear of the channel.

4,356,668

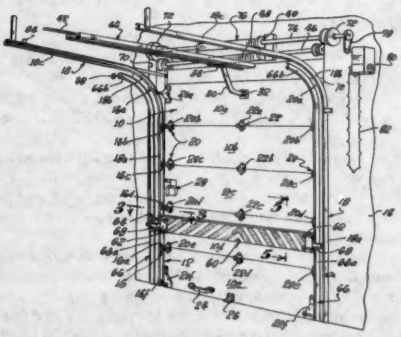
METHOD AND APPARATUS FOR DOOR PROTECTION

Richard P. Wagner, 825 Casa Loma Dr., Reno, Nev. 89503

Filed Oct. 20, 1980, Ser. No. 198,450

Int. Cl.³ E06B 3/00

U.S. Cl. 49—506 1 Claim



1. The method of preventing passage through a partially opened door comprising: (1) closing a door; (2) placing a barrier in position across the door opening area; (3) establishing a predetermined attitude of opening of the door; (4) providing means suitable to remove the barrier when the door reaches the predetermined condition; (5) sending a signal to the barrier removal means when the door reaches the predetermined condition; and (6) removing the barrier upon receipt of the signal.

4,356,669

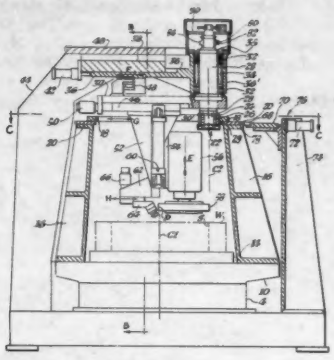
CAM CONTROL GRINDING MACHINE

Nils Hoglund, 100 E. Linton Blvd., Ste. 408B, Delray Beach, Fla. 33444

Filed Oct. 23, 1981, Ser. No. 314,308

Int. Cl.³ B24B 17/02

U.S. Cl. 51—101 R 15 Claims



1. A grinding apparatus for grinding a surface on a workpiece comprising:

a cam member having a surface with a changing radius of curvature corresponding to the contour of the surface to be ground on the workpiece;

a means for supporting said cam member;

a turntable on which the workpiece and said means for supporting said cam member are connected;

a means for rotating said turntable;

a stationary base for supporting said turntable and said means for rotating said turntable;

a grinding means whose axis of rotation is parallel to the axis of rotation of said turntable;

a cam follower whose axis of rotation is parallel to the axis of rotation of said turntable;

a cam follower support means for supporting said cam follower;

said cam follower support means linearly movable in response to movement of said cam follower;

a grinder support means for supporting said grinding means;

said grinder support means connected to said cam follower support means;

said grinder means rotatable about the axis of said cam follower;

said grinding means linearly movable in relation to said grinder support means into and away from the axis of said cam follower;

said grinding means linearly movable in relation to said grinder support means parallel to the axis of said cam follower;

a means for biasing said grinder support means such that said cam follower remains in contact with said cam and said grinding means is maintained in machinable contact with the work surface;

a means for rotating said grinder support means about said cam follower axis to continuously maintain a normalty relationship between the tangent to the work surface contour at the point said grinding means contacts the work surface and a plane passing through the axes of said cam follower and said grinding means, said plane also passing through the contact points between said grinding means and the work surface and between said cam member and said cam follower;

a means for linearly moving said grinding means into and away from the axis of said cam follower; and

a means for linearly moving said grinding means parallel to the axis of said cam follower.

4,356,670

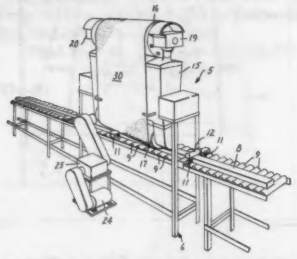
APPARATUS AND METHOD FOR IN-LINE PLANING OF LUMBER USING ANGLED ABRASIVE HEAD

Conrad T. Freerks, Maplewood, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 104,652, Dec. 17, 1979, abandoned. This application Jul. 31, 1981, Ser. No. 288,902

Int. Cl.³ B24B *21/04*

U.S. Cl. 51—139 **5 Claims**



1. An in-line angle planing apparatus for planing a surface of a workpiece comprising a length of lumber, said apparatus comprising

a bed,

conveyor means supported by said bed for carrying a workpiece longitudinally along a linear path across said bed,

support and drive means for an endless abrasive belt comprising a plurality of rolls, one of which is a contact drum having an axis disposed at an angle of between 5 and 15 degrees to said path and having sufficient length to extend across the width of said path at a said angle and support a said belt having a width sufficient to extend across said path, and drive means for driving one of said rolls,

means constraining a said workpiece for movement by said conveyor means longitudinally of said bed and past said contact drum such that said workpiece engages said belt on said contact drum adjacent one end on one side of the axis of said drum and exits adjacent the other end of said drum on the opposite side of said axis and wherein said workpiece contacts and moves across said belt at an angle of between 5 and 15 degrees to the axis of said drum.

4,356,671

METHOD AND APPARATUS FOR CLEANING ABRASIVE SURFACES

David L. Gabrielson, and Larry D. Mohr, both of Tempe, Ariz., assignors to Belt Master, Inc., Phoenix, Ariz.

Filed Jul. 14, 1980, Ser. No. 168,581

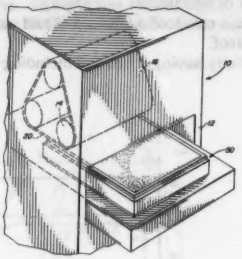
Int. Cl.³ B24B *1/00, 53/02*

U.S. Cl. 51—325 **4 Claims**

1. A method of cleaning clogging materials from the abrasive surface of a continuous abrasive belt machine having an adjacent spaced-apart conveyor with a work area defined between said belt and conveyor, said method comprising:

(a) passing a cleaning module independent of said machine across the said work area so an area of the belt and module are moved relative one to the other, said module having a width substantially corresponding to the belt width and having a cleaning material contained within an abradable frame;

(b) biasing said belt and module in contact one with the other as the module moves across the work area to cause said



cleaning material to engage said belt and remove dust and pitch build-up.

4,356,672

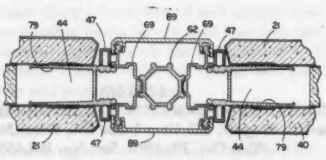
PARTITIONING SYSTEM

Ronald H. Beckman, Providence, and Howard K. Yarme, Foster, both of R.I., assignors to Vaughan Walls, Inc., Zeeland, Mich.

Filed Feb. 8, 1980, Ser. No. 119,667

Int. Cl.³ A47B *5/00*

U.S. Cl. 52—36 **16 Claims**



1. A partition assembly for segmenting an open area having a floor and a ceiling into smaller compartment-like regions, said partition assembly comprising:

a plurality of space-dividing, generally rectangular panel members extending from said floor to said ceiling and joined together along adjacent longitudinal edges;

a panel joint assembly positioned between said adjacent edges for joining said panels along said adjacent longitudinal edges, said joint assembly including

a panel connector attached to each of said adjacent edges of said panel members;

a face plate adapted for lateral snap-fit receipt of said panel connector, said face plate member having a central attachment portion; and

a corner spacer adapted for attachment with a plurality of said face plate members, said corner spacer including a plurality of attachment means equally radially spaced about a center portion thereof for receiving said central attachment portion of said face plate members, said attachment means governing panel-to-panel angular relationships, said attachment means adapted to mate with said central attachment portion in a nesting relationship so as to permit free lateral nesting and removal of said central attachment portion from a corresponding attachment means; and

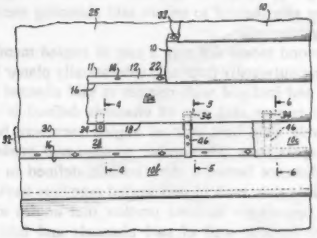
means separate from said attachment portion and said attachment means for releasably securing said attachment portion and said attachment means.

4,356,673

SIDING PANEL SYSTEMS AND METHODS OF INSTALLATION

J. Lynn Gailey, Newton Falls, Ohio, assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Aug. 11, 1980, Ser. No. 177,358
Int. Cl.³ E04G 23/00; E04D 1/34, 3/362
U.S. Cl. 52—127.1 15 Claims



10. A siding panel assembly mounted on a wall and comprising, in combination,

(a) a plurality of courses of horizontally elongated siding panels secured to the wall, said siding panels being disposed one above another on the wall in parallel, overlapping array, each of said panels having a top margin along which it is attached to the wall, a bottom margin, and complementary first and second locking means respectively adjacent said top and bottom margins for interlocking vertically adjacent overlapping panels by engagement of the first locking means of one overlapped panel with the second locking means of an overlapping panel immediately above it in the array, said assembly including vertically spaced upper and lower courses of the panels and at least one other panel interposed between the upper and lower courses, the vertical distance between the second locking means of said upper course and the first locking means of said lower course being less than the vertical distance between the first and second locking means of said interposed panel;

(b) clip means fixedly mounted on the wall and interlocked with the second locking means of a panel of said upper course for securing the bottom margin of the upper-course panel to the wall; and

(c) retaining means secured to the wall and having a portion engaging the first locking means of the interposed panel, at a location behind the last-mentioned upper-course panel and above the elevation at which the first locking means of the interposed panel would interlockingly engage the second locking means of said last-mentioned upper-course panel, for holding the first locking means of the interposed panel against downward movement below said location and to secure the top margin of the interposed panel to the wall, with said clip means and said retaining means both concealed behind the upper-course and interposed panels,

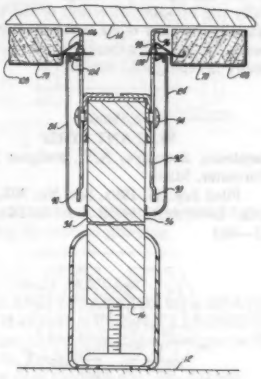
(d) said clip means being shaped and dimensioned to permit the top margin of the interposed panel to be inserted upwardly behind the last-mentioned upper-course panel at least sufficiently to position the first locking means of the interposed panel at said location.

4,356,674

FREE-STANDING SPACE DIVIDER ASSEMBLY WITH ACOUSTIC UPPER END BORDER

Robert L. Propst, Bellvue, Wash.; Michael A. Wodka, Ypsilanti, and Ronald R. Hodges, Grandville, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Mar. 31, 1980, Ser. No. 135,244
Int. Cl.³ E04B 1/99, 2/74
U.S. Cl. 52—242 12 Claims



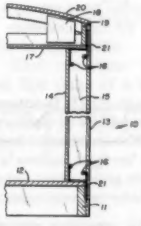
1. A space divider assembly for an enclosure having a ceiling and a floor, said assembly comprising a plurality of upright floor-supported panels arranged end to end, means forming upward border extensions of said panels, said means comprising a plurality of border members secured to each other and to said panels so as to project upwardly and form a border at the upper ends of said panels which is spaced from and structurally independent of said ceiling, and upwardly facing sound absorbing material supported on said border members and spaced below said ceiling, means forming connecting joints between adjacent ones of said panels, bracket means secured to said joint means, said border members being of a length to extend between adjacent bracket means, and mounting means at said bracket means operable to secure adjacent ends of adjacent border members to said bracket means and to each other whereby to stabilize the end-to-end arrangement of said panels.

4,356,675

TIE-DOWN RUNNER FOR MOBILE HOME WALL CONSTRUCTION

James E. Reicherts, Cary, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Oct. 24, 1980, Ser. No. 200,344
Int. Cl.³ E04B 5/00
U.S. Cl. 52—264 17 Claims



1. A steel tie-down runner for use in wall construction in mobile homes, said tie-down runner comprising

an integral elongate configuration having a generally J-

shape, said runner capable of being positioned at the base of studs along flooring and at the top of studs at ceilings, said runner having a shorter flange forming one arm of the J-shape, said shorter flange terminating in a base plate extending at generally right angles thereto, said base plate terminating at an opposite edge in a longer flange forming the longer arm of the J-shape, said longer flange including a return portion extending inwardly of the runner, said return being capable of engagement within notches of studs, said base plate including tab means extending in generally the opposite direction of the shorter flange in substantially the same plane as the shorter flange, and said tab means having holes therein to provide means for mechanically fastening said runner.

4,356,676

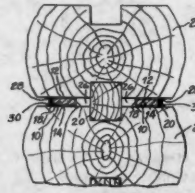
SEALANT STRIP

Arthur Hauptman, Brooklyn, N.Y., assignor to Norton Company, Worcester, Mass.

Filed Sep. 21, 1981, Ser. No. 303,804

Int. Cl.³ E04C *1/10*; E04B *1/10*; B32B *3/26, 7/12*

U.S. Cl. 52—403 **14 Claims**



11. A sealed joint between two opposed edges of adjacent structural elements comprising a generally rectangularly shaped sealant strip compressed between the opposed edges of said elements in a manner to leave two sides of the strip exposed, pressure sensitive adhesive layers on opposite sides lengthwise of said strip which sides are engaged by said edges for bonding the strip to each of said opposed edges leaving said two sides exposed, each of said exposed sides having a thin, resilient layer in the form of a high performance cured coating thereon that is impervious to water and air, and said impervious layer being in contact with the opposed edges of said elements.

4,356,677

SYSTEM WALL OR SYSTEM CEILING

Theodorus W. Mosch, Kanaalkade 66, t'Zand, Netherlands

Filed Mar. 28, 1980, Ser. No. 134,810

Claims priority, application Netherlands, Dec. 27, 1979, 7909311

Int. Cl.³ E04B *5/57*

U.S. Cl. 52—489 **3 Claims**

1. A system for attaching deformable slabs to structural girders to form system walls or system ceilings, said system comprising:

(a) a plurality of separate deformable slabs, each slab having a pair of channels extending into a side confronting one of said structural girders, each of said channels including a pair of spaced side walls and a bottom wall therebetween, said channels being parallel to one another and spaced apart by a predetermined distance;

(b) a plurality of spaced clamping members, each of said members having a first means which engages said structural girders, and a second means which engages said deformable slabs;

(1) said first means having a pair of adjacently disposed and deformable clamping feet which are integrally joined to one another by a substantially planar base portion extending therebetween, said deformable clamping feet being folded over said structural girder on either side thereof to secure said clamping member to said girder;

(2) said second means defining a pair of angled members extending outwardly from said substantially planar base portion and inclined with respect to said channel side walls to engage said pair of channels defined in said deformable slab, said pair of angled members being spaced apart from one another to span said predetermined distance between the channels defined in said deformable slab, each of said angled members having a second opposingly inclined portion that angles away from the bottom wall of said channels and into the opposing side wall of said channels;

(c) whereby slight pressure against each deformable slab in the direction of the confronting structural girder is sufficient to initiate penetration of said second angled portion into the side walls of each channel of said deformable slab to thereby secure said slab to said clamping member.

4,356,678

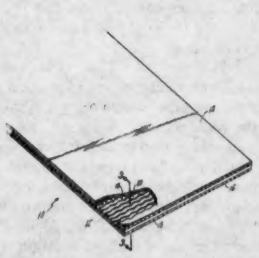
COMPOSITE STRUCTURE

Merritt B. Andrews, Westfield, Mass., and Edward A. Rothman, South Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 972,570, Dec. 22, 1978. This application Feb. 25, 1981, Ser. No. 238,259

Int. Cl.³ E04C *2/32*

U.S. Cl. 52—799 **6 Claims**



1. A structural composite panel comprising:

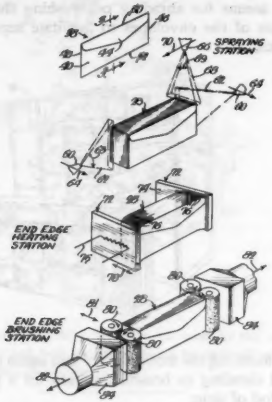
first and second facing sheets, each of said facing sheets comprising a plurality of high modulus, high strength reinforcing filaments embedded in a matrix material; and

a ruffled corrugated core secured between said first and second facing sheets, said core having a plurality of corrugations formed by parallel alternating ridges and grooves, each of said ridges and grooves having a longitudinal axis having periodic oscillations in the plane of said core.

4,356,679
APPARATUS FOR APPLYING A DEGRADING CHEMICAL TO ENVELOPES

James B. Ellis, Palatine; Raymond E. Sims, Elk Grove Village, and Joseph Savit, Glencoe, all of Ill., assignors to AES Technology Systems, Inc., Elk Grove Village, Ill.

Filed Mar. 31, 1980, Ser. No. 135,353
Int. Cl.³ B65B 43/26, 43/32
U.S. Cl. 53—381 R 2 Claims



1. An apparatus for applying to the edges of envelopes an envelope material degrading agent, said apparatus comprising:

(a) envelope holding means for defining an envelope batch holding region in said apparatus and for receiving in said region a plurality of envelopes arranged in face-to-face relationship to form at least one batch of envelopes with an outer envelope at each end of the batch with at least one edge of each envelope in the batch disposed substantially in a common plane located along one margin of said envelope batch holding region;

(b) a spray gun slidably disposed on fixed support rods for providing a generally planar, fan shaped spray of a liquid containing said envelope material degrading agent with the fan-shaped spray oriented in a plane substantially perpendicular to said common plane; and

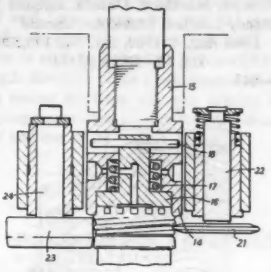
(c) an endless chain, a pin carried on said endless chain and engaged with said spray nozzle, and means for driving said endless chain to move said spray nozzle and spray in a direction generally parallel to said common plane along said batch holding region margin from one side of said batch holding region to the other side.

4,356,680
METHOD OF APPLYING CLOSURES TO CONTAINERS

John H. Guest, Sutton Coldfield, England, assignor to Metal Closures Limited, England

Continuation of Ser. No. 42,409, May 25, 1979, abandoned. This application Jan. 14, 1981, Ser. No. 225,063
Claims priority, application United Kingdom, May 31, 1978, 25108/78
Int. Cl.³ B67B 3/18; B65B 7/28, 61/18
U.S. Cl. 53—412 13 Claims

1. A method of applying an unthreaded metal closure to an externally threaded bottle neck which comprises placing a cup-shaped metal closure over the mouth of a bottle, applying pressure to the top of the closure shell to press a gasket within the shell firmly against the mouth of the bottle, and rolling thread in the skirt of said shell while so held characterised in that the diameter of the upper end of the skirt is reduced at angularly spaced intervals to press said gasket into sealing relationship with a cylindrical sealing surface on the neck of

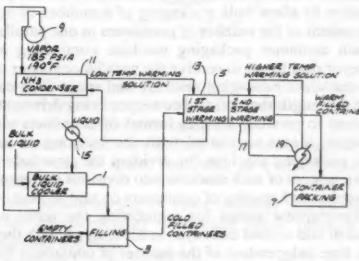


the bottle above the bottle threads and simultaneously to form a band of knurling for manual grasping.

4,356,681
METHOD AND APPARATUS FOR HEATING CONTAINERS HAVING A PRODUCT LIQUID THEREIN

William M. Barnes, Creve Coeur, Mo., assignor to The Seven-Up Company, St. Louis, Mo.

Filed Oct. 31, 1980, Ser. No. 202,865
Int. Cl.³ B65B 3/04
U.S. Cl. 53—440 24 Claims



11. In a process for bottling carbonated liquid wherein said liquid is cooled by refrigeration prior to the filling of containers with the liquid and the filled containers are thereafter closed and then warmed so that the surface temperature of the sides of each of the containers is above the dew point of the ambient air, thereby preventing condensation of moisture thereon prior to packing in cardboard cartons, the improvement which comprises:

compressing a refrigerant vapor;

transferring heat from a compressed refrigerant vapor to a first liquid heating medium, thereby condensing said vapor to provide a liquid refrigerant;

contacting the closed filled containers with said heated liquid medium in the first stage of a container heating system having a plurality of stages, thereby transferring heat from said first medium to said containers; and

thereafter contacting said containers with a second liquid heating medium in a second stage of said system, said second medium entering said second stage at a temperature higher than the temperature at which said refrigerant vapor is condensed;

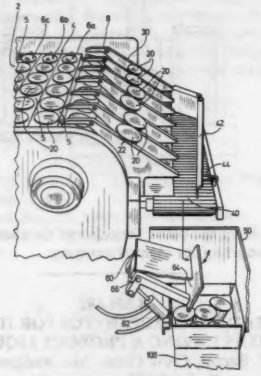
said containers being heated in said system to a temperature higher than the dew point of the ambient air, thereby preventing condensation of moisture on the outside surfaces of the side walls of said containers leaving said system.

4,356,682

COUNTING MECHANISM FOR CREAMER FILLING MACHINE

Derek V. Mancini, Markham, Canada, assignor to Consumers Glass Company Limited, Etobicoke, Canada

Filed Aug. 4, 1980, Ser. No. 175,320
Int. Cl.³ B65B *35/44*
U.S. Cl. 53—443 **12 Claims**



1. An apparatus for dividing the multiple parallel output of a container packaging machine having an intermittent conveyor movement which is indexed in accordance with the packaging operation to allow bulk packaging of a number of containers independent of the number of containers in one parallel output of such container packaging machine comprising a second conveyor positioned to receive the parallel container output of such container packaging machine and space such containers along the length thereof, said conveyor being driven at a speed sufficient to produce a series format of containers along said conveyor; means associated with the indexing of such container packaging machine for dividing the time between successive indexes of such machine into divisions representative of the number and spacing of containers on said second conveyor and interrupting means for segmenting the series container output of said second conveyor in accordance with the divided index time independent of the number of containers fed to said second conveyor in parallel format.

4,356,683

METHOD AND APPARATUS FOR HOLDING AND CONVEYING A BATCH OF ENVELOPES TO FACILITATE THE OPENING OF THE ENVELOPES

James B. Ellis, Palatine; Raymond E. Sims, Elk Grove Village, and Mieczyslaw J. Lisiecki, Norridge, all of Ill., assignors to AES Technology Systems, Inc., Elk Grove Village, Ill.

Filed Mar. 31, 1980, Ser. No. 135,326
Int. Cl.³ B43M *7/00*
U.S. Cl. 53—492 **13 Claims**

1. A method for conveying and opening envelopes comprising the steps of:

(a) arranging and aligning a plurality of envelopes in face-to-face relationship to form at least one batch of envelopes with the edges of the envelopes in said batch aligned in a substantially common plane along at least one portion of the batch;

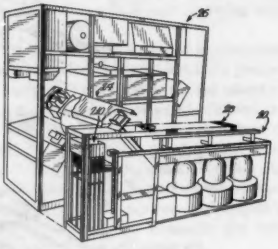
(b) applying a degrading agent along at least said aligned edges of said envelopes, said agent being the type that functions more effectively when heated; and

(c) conveying said batch of envelopes around an endless conveying loop with the loop oriented in a substantially vertical plane and defining upper and lower horizontal paths, said conveying step including the following steps:

(1) moving said batch of envelopes to a heating station having a heating member adapted to contact the aligned edges of the envelopes in the batch to facilitate degradation and deterioration of the envelope edges;

(2) terminating the movement of said batch of envelopes at said heating station for a predetermined period of time while said envelope edges are contacted by said heating member;

(3) moving said batch of envelopes downstream of said heating station to an abrading or brushing station having means for abrading or brushing the deteriorated edges of the envelopes to facilitate separation of the edges;



(4) terminating the movement of said batch of envelopes at said abrading or brushing station for a predetermined period of time;

(5) reciprocating said means for abrading or brushing the edges of the envelopes in contact with said envelope edges at said abrading or brushing station;

(6) moving said batch of envelopes to a discharge station spaced from said abrading or brushing station; and

(7) terminating the movement of said batch at said discharge station for a predetermined period of time to permit the removal of said batch of envelopes.

4,356,684

BATCH METHOD AND APPARATUS FOR HEATING ENVELOPE EDGES TO SEPARATE THE ENVELOPE PANELS

James B. Ellis, Palatine, and Raymond E. Sims, Elk Grove Village, both of Ill., assignors to AES Technology Systems, Inc., Elk Grove Village, Ill.

Filed Mar. 31, 1980, Ser. No. 135,356
Int. Cl.³ B65B *43/38*
U.S. Cl. 53—492 **18 Claims**

1. a method of processing envelopes wherein each envelope has two planar panels that (1) define opposite faces of the envelope and (2) are connected together along a plurality of edges; said method being effective to separate said panels of each envelope along at least one of said edges; said method comprising the steps of:

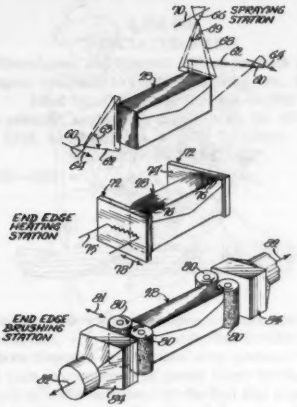
(a) arranging a plurality of said envelopes in face-to-face relationship to form at least one batch of envelopes with an outer envelope at each end of the batch and with at least one edge of each envelope in the batch being disposed substantially in a common plane that is generally normal to the envelope faces;

(b) maintaining said batch of envelopes under compression by exerting a force against a portion of the surface of each of said two outer envelopes in the batch;

(c) before or after step (a), applying to at least said one edge of each of the envelopes an envelope material degrading agent that functions as a degrading agent more effectively when heated;

(d) effecting relative movement between said batch of envelopes and a heating surface towards each other to contact the edges of said envelopes in said batch to which said agent has been applied; and

(e) with contact established by step (d), reciprocating the heating surface in opposite directions substantially parallel with said common plane of the contacted edges for promoting more effective transfer of heat to the contacted envelope edges and for facilitating escape of vapor from the contacted envelope edges.



4,356,685

MACHINE FOR TYING PACKAGES OR THE LIKE

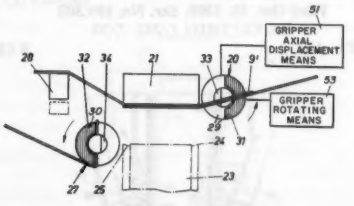
Hans H. Büttner, Obmettmann 13, 4020 Mettmann, Fed. Rep. of Germany

Filed Jun. 7, 1979, Ser. No. 46,597

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825332

Int. Cl.³ B65B *13/24*

U.S. Cl. 53—588 **8 Claims**



1. In a machine for tying packages or the like with a tying means which is held fast at one end and guided by means of a tying means guide device around the package with the tying means guide device being driven cyclically back and forth, and upon a movement thereof, accumulating a layer of tying means which surrounds the package, and which is wound around the package, respectively, and grippers for holding the tying means fast, each of said grippers being formed with a gripper slot adapted to operatively cooperate with the tying means, each of said grippers constitutes gripper means for holding and releasing, respectively, said tying means in said slot moving means for moving said grippers together with an end of the tying means held fast by it in cyclic dependency in a rotary movement which turns the gripper slot around, the improvement comprising

sealing means for sealing the end of said tying means, said sealing means has an end,

said grippers constitute two grippers, said moving means includes displacing means for axially displacing the entire of said grippers each respectively at a time and rotating means for rotating said grippers each respectively at a time, said rotating means rotates one of said two grippers while said sealing means is on said tying means and after release of said tying means by said one gripper, each respectively at a time into a rotary position in which said gripper slot of said one gripper is substantially transverse to the length direction of the tying means and said axially displacing means displaces said one gripper to thereby abut the tying means so as to push the tying means beyond the end of and out of the sealing means.

4,356,686

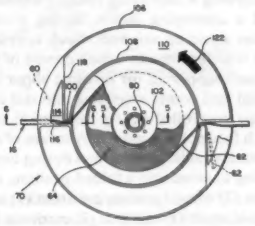
CUTTING MECHANISM FOR A GRASS CUTTING MACHINE

William R. Lessig, III, Cockeysville, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Apr. 30, 1981, Ser. No. 259,484

Int. Cl.³ A01D *55/18*

U.S. Cl. 56—295 **4 Claims**



1. A grass cutting mechanism having a drive shaft journaled in a housing and driven by rotary power means mounted in the housing, the cutting mechanism comprising:

(a) a disc means detachably affixed at the lower end of the drive shaft and to rotate therewith in a predetermined direction,

(b) the disc means having an inner chamber and an outer chamber communicating with each other through an intermediate aperture,

(c) the aperture having a pair of spaced walls defining a fulcrum, with one of the walls being a downstream wall extending radially outwardly at an inclined angle with the leading edge thereof in the direction of rotation, and the other of the walls being an upstream wall turned substantially tangentially from the aperture to extend perpendicular to and away from the downstream wall for a distance substantially twice the length of the downstream wall whereby the outer chamber is formed therebetween,

(d) a cutting blade is mounted in the inner chamber of the disc means and is threaded through the aperture to extend along the downstream wall in an inclined position, outwardly of the outer chamber a predetermined distance, which distance is greater than the length of the inclined downstream wall and less than the length of the upstream wall,

(e) the cutting blade is made of flexible plastic having a predetermined stiffness, and having a width of between five to ten times greater than its thickness, and upon striking a heavy object the cutting blade is wholly deflected into the outer chamber of the disc,

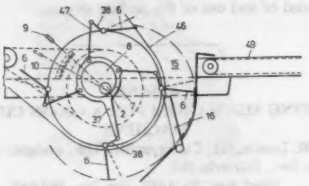
(f) the cutting blade having a leading edge which follows the incline of the leading edge of the downstream wall to provide a cutting edge at the thin surface of the leading edge thereof and to provide a fan effect at the wide surface thereof to lift the grass being cut.

4,356,687

LOADING EQUIPMENT FOR AGRICULTURAL BULK GOODS

Josef Lesslhumer, Wels, Austria, assignor to Johann Wolf G.m.b.H., Austria

Filed Jan. 28, 1981, Ser. No. 229,095
Claims priority, application Austria, Feb. 14, 1980, 778/80
Int. Cl.³ A01D 43/02
U.S. Cl. 56—364 16 Claims



1. A loading equipment comprising a take-up means for taking up agricultural bulk material such as grass or hay, and further comprising a conveying channel adjoining said take-up means, and a conveying means having a conveying drum which rotates about an axis and which is provided at its circumference with feed combs which consist of feed prongs and which are each supported for pivoting about an axis, the feed prongs of said feed combs extending into said conveying channel and being controlled during circulation such that during feeding, each feed comb is moved by means of a crank arm into an approximately radial position and during circulation outside the conveying channel into a folded position, characterized in that said axis (2) of said conveying drum (1) is stationary and that inside said drum (1) said axis (2) carries at least one eccentric disc (8) on which a control ring (7 or 33 or 36, respectively) is rotatably supported which is provided with a coupling means connected to said conveying drum (1), and actuating arm (47) which are each articulated at one end thereof to said control ring (7) and at the other end thereof to the associated crank arm (38).

4,356,688

METHOD FOR JOINING TWO YARN PIECES, AND THE DEVICE FOR CARRYING OUT THE METHOD

Edwin Zürcher, Le Lignon; Guy Negaty-Hindi, Onex, both of Switzerland, and Carlos Pujol, Barcelona, Spain, assignors to Battelle Memorial Institute, Carouge, Switzerland

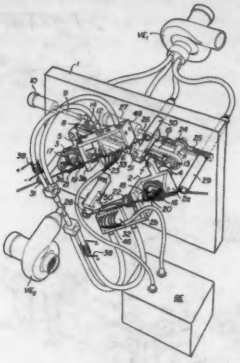
Filed Oct. 23, 1980, Ser. No. 199,832
Claims priority, application Switzerland, Nov. 23, 1979, 10448/79
Int. Cl.³ B65H 69/06; D01H 15/00
U.S. Cl. 57—22 10 Claims

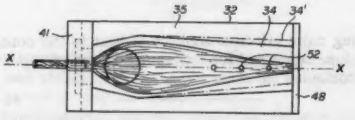
1. A method of splicing two yarn pieces, wherein the twist of one portion of each of said pieces is transferred by establishing an excess twist in the remainder of said pieces, and the loose fibers are removed from each of said pieces to form a substantially flat tuft of fibers at the end of each piece, said method comprising the steps of:

disposing the fibers of each tuft substantially in a plane in an elongated shape of which the maximum width is substantially greater than the diameter of the yarn and is situated in a zone close to the base of the tuft, the width then decreasing until its end is reached;

cutting the ends of the tufts at given lengths from their bases;

disposing the two tufts adjacent to each other so that the end of each of them is opposite the widest zone of the other tuft;





causing part of the fibers of the end zone of each tuft to penetrate into the other tuft; and

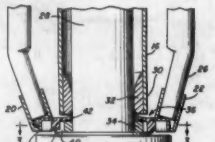
re-establishing transferred twist in said tufts.

4,356,689

COMBINATION SPLINE COUPLING AND SPINDLE WASHER FOR ROVING FRAMES

David C. Frederick, Gastonia, N.C., assignor to Hope Plastic Corporation, Gastonia, N.C.

Filed Oct. 21, 1980, Ser. No. 199,303
Int. Cl.³ D01H 1/242, 7/50
U.S. Cl. 57—102 8 Claims



1. A spline coupling and spindle washer device for roving frames, said device comprising:

a spindle gear having gear teeth and mounted for rotation with a spindle;

spline coupling means having gear teeth for engaging the gear teeth of said spindle gear associated with said spindle, the spline coupling means coupled to rotate a flyer and thereby to effect a driving connection between said spindle gear and said flyer; and

spindle washer means positioned within a gear housing and being of unitary construction with said spline coupling means and being concavely upwardly sloped, said spindle washer means thus constructed and arranged for serving to prevent oil contamination of yarn on a bobbin positioned

over said spindle and to prevent water and lint contamination in an area of engagement between said spindle gear and said spline coupling means.

4,356,690

FASCIATED YARN

Koichi Minorikawa, and Shinichi Kitazawa, both of Sonoyama Otu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 26, 1979, Ser. No. 24,003

Claims priority, application Japan, Mar. 24, 1978, 53-32950; Mar. 24, 1978, 53-32951; Jun. 8, 1978, 53-69950

Int. Cl.³ D02G *3/36, 3/22*

U.S. Cl. 57—210 **18 Claims**

1. A fasciated yarn which comprises a core portion comprising a substantially non-twisted stable fiber bundle and wrapped staple fibers disposed around said core portion, wherein said fasciated yarn is composed of staple fibers having an average fiber length of $\bar{l}$, characterized by the fact that more than about 15% of said fibers have a fiber length less than 0.5 $\bar{l}$, and that more than about 15% of said fibers have a fiber length greater than 1.5 $\bar{l}$.

4,356,691

THREAD DRAWING-OFF DEVICE AND METHOD FOR THE INSERTION OF THE DRAWN-OFF THREAD IN AN OPEN-END SPINNING DEVICE

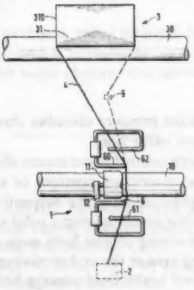
Rupert Karl; Rudolf Oexler; Edmund Schuller; Erwin Braun; Erick Bock, and Franz Schreyer, all of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,680

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939706

Int. Cl.³ B65H *51/28;* D01H *9/02, 15/00*

U.S. Cl. 57—263 **10 Claims**



1. A thread drawing-off device for an open-end spinning device having a pair of draw-off rollers comprising an overmounted pressure roller which cooperates resiliently with a driven roller projecting across the front of the pressure roller comprising:

said thread drawing-off device (3) being positioned between said spinning chamber (2) and a wind-on device;

means for mounting said driven roller (10) between said spinning chamber (2) and said wind-on device (3) so that the thread path extending between said wind-on device (3) and said spinning chamber (2) presses against said driven roller (10);

at least one recess (113, 114) provided on the circumference of one front (110) of said pressure roller (11), said recess being of sufficient size to temporarily completely release a thread (4) sliding along the surface of said driven roller (10) and lying adjacent to the front (110) of the pressure roller (11) so that said thread can be inserted between said driven roller and said pressure roller.

4,356,692

METHOD AND APPARATUS FOR REMOVING AN IRREGULARITY IN A THREAD

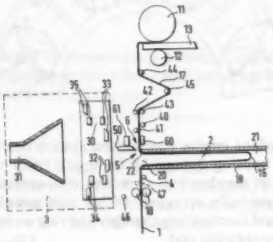
Rupert Karl; Walter Mayer; Edmund Schuller, and Erwin Braun, all of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,343

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939644

Int. Cl.³ D01H *15/02*

U.S. Cl. 57—263 **24 Claims**



1. A method of eliminating an irregularity in a thread being supplied from a source using a thread joining device comprising:

supplying said thread with said irregularity in the form of a loop into a thread reserve (2);

inserting the thread above and below said thread reserve in the form of two additional loops into said thread joining device;

separating and removing said loop containing said irregularity;

supplying additional thread from said source to said thread reserve for being temporarily stored while thread pieces which have arisen as a result of separating and removing of said loop are joined together and excessed ends are separated and removed.

4. An apparatus for eliminating an irregularity in a thread being supplied from a source and taken up on a take-up device,

a thread joining device located between said source and said take-up device, said thread joining device including a thread separator, a thread suction extractor (31) associated with said separator, and a pneumatic thread store (2) disposed adjacent said thread joining device and the thread path extending between said source and said take-up device comprising:

a pair of thread inserters means (4, 40) one being located above said pneumatic thread store (2) and the other being located below said thread store (2) for supplying said thread (1) to said thread joining device (3) and said thread suction extractor (31) associated with said separator (34,35);

a second separator (32,33) for separating said thread extending to said thread store (2);

an orifice (20) of said thread store (2) disposed adjacent said thread path between said source and said thread joining device (3) for receiving said thread having said irregularity and forming a loop therein;

means operably connected to said thread store for separating and removing said loop containing said irregularity, and

means activating said thread joining device for joining the

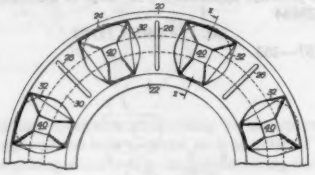
pieces of thread which have arisen as a result of separating and removing said loop.

4,356,693

GAS TURBINE ENGINE COMBUSTION CHAMBERS

Graham J. Jeffery, Kenilworth, and Richard C. Adkins, Milton Keynes, both of England, assignors to Rolls-Royce Limited, London, England

Filed Jun. 27, 1980, Ser. No. 163,482
Claims priority, application United Kingdom, Apr. 22, 1980, 8013268
Int. Cl.³ F02C 3/14
U.S. Cl. 60—39.37 4 Claims



1. A gas turbine engine combustion system comprising:
an annular housing defined by inner and outer walls;
a plurality of combustion chambers equi-spaced apart and circumferentially arranged within said annular housing, each of said combustion chambers having an upstream end and a downstream end;
a diffusion passage upstream of the upstream ends of said combustion chambers, said diffusion passage being defined by upstream inner and outer portions respectively of the inner and outer walls of said annular housing and being arranged to receive a flow of compressed air; and
a plurality of diffusion control housings partially defining said diffusion passage, each of said diffusion control housings being axially aligned with and extending from the upstream end of a respective one of said combustion chambers, each of said diffusion control housings being wedge-like in plan form and having a circumferential width and a radial height increasing in a downstream direction, and each of said diffusion control housings comprising radial side walls and circumferential end walls and having an upstream air inlet for receiving at least a portion of the compressed air from said diffusion passage and discharging the same into the respective one of said axially aligned combustion chambers, each of said diffusion control housings further having an opening arranged to receive a fuel injector.

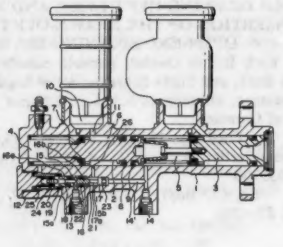
4,356,694

MASTER CYLINDER HAVING A FLUID PRESSURE CONTROL VALVE MECHANISM

Naganori Koshimizu, and Koichi Shiiya, both of Yokohama, Japan, assignors to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 920,357, Jun. 29, 1980, abandoned.
This application Apr. 22, 1980, Ser. No. 143,477
Int. Cl.³ B60T 11/20
U.S. Cl. 60—562 3 Claims

1. The combination of a master cylinder for a brake system and a fluid pressure control valve mechanism, said combination comprising:
a master cylinder body having a cylinder bore therein, one end of which is closed and the other end open;
two axially spaced piston members slidably positioned within said cylinder bore, the piston member closer to said closed end defining a first pressure chamber between said closed end and said closer piston member, and means spacing the other piston member from said closer piston for defining a second pressure chamber between the two piston members, said closer piston member having a pair of flanges spaced therealong for defining at least one fluid supply chamber therebetween within said cylinder bore, and seal members associated with said flanges within the bore, the seal member closer to said closed end of the cylinder bore functioning as a check valve for allowing fluid from said supply chamber to pass into the first pressure chamber;
a reservoir means at a pressure lower than the pressure normally present in said pressure chambers and said master cylinder body having a passage therein through which said reservoir means is in open communication with said fluid supply chamber;
said master cylinder body having a control valve mechanism body having a control valve bore therein and fluid pressure control valve means in said control valve bore, said control valve bore having one end portion in communication with said first pressure chamber, the other end portion in communication with the second pressure chamber, said control valve mechanism body further having a rear wheel brake fluid passage in communication with said first of said pressure chambers through said one end portion, and a front wheel brake fluid passage in communication

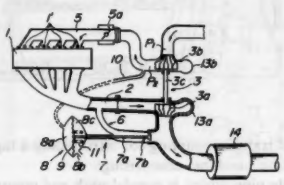


with said second pressure chamber through the other end of said control valve bore;
said fluid pressure control valve means slidably positioned in said bore, the respective portions of said valve bore receiving the pressure from the respective brake fluid passages, said valve means having a solid stepped piston with a pressure receiving area at both ends, the effective pressure receiving area at the end receiving the pressure from the front wheel brake fluid passage being larger than the effective area at the end receiving the pressure from the rear wheel brake fluid passage pressure, said stepped piston being movable in said bore past said rear wheel brake fluid pressure when it moves;
said pressure control valve means and the inner surface of said control valve bore defining between them a space substantially liquid tightly isolated from both brake fluid passages; and
said master cylinder body having a communication bore between said space and said supply chamber,
whereby, when the control valve means slides within said bore of said control valve mechanism body, any fluid within said space can escape to said supply chamber through said communication bore.

4,356,695
BY-PASS VALVE APPARATUS OF AN EXHAUST TURBOCHARGER FOR AN INTERNAL COMBUSTION ENGINE

Yasuo Sumi; Tsugno Watanabe, and Ken Yamane, all of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 17, 1979, Ser. No. 104,662
Claims priority, application Japan, Dec. 18, 1978, 53-155012
Int. Cl.³ F02B *37/12*
U.S. Cl. 60—602 **3 Claims**



1. A by-pass valve apparatus of an exhaust turbocharger for an internal combustion engine including a compressor having a housing with a through passage and an inlet and an outlet, the compressor being inserted into an intake air conduit of the engine, a turbine inserted into an exhaust conduit of the engine, means for connecting the turbine to the compressor whereby the turbine is driven by exhaust gas from the engine and drives the compressor, and a by-pass conduit selectively connected to the exhaust conduit upstream of the turbine, the by-pass conduit by-passing the turbine to waste the exhaust gas therethrough, the by-pass valve apparatus being provided to selectively open and close the by-pass conduit and comprising in combination:

a pressure probe for detecting the total pressure of the intake air flow downstream of the compressor;

a diaphragm device having a diaphragm which defines first and second chambers, the first chamber being in communication with the pressure probe and supplied with the total pressure detected by the pressure probe, the second chamber being in communication with atmospheric pressure; and

a by-pass valve having a valve element inserted into the by-pass conduit, and a valve stem, one end of which is connected to the valve element and another end with the diaphragm.

4,356,696
TURBOCHARGER COMBUSTOR SYSTEM

John L. Mason, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

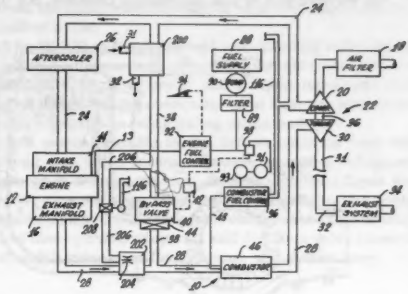
Filed Apr. 4, 1980, Ser. No. 137,162
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—606 **10 Claims**

1. In an internal combustion engine having a turbocharger turbine driven by exhaust gases to drive a turbocharger compressor to provide compressed charge air to the engine, a combustor system comprising a combustor coupled between the engine and the turbocharger for in-line passage of engine exhaust gases;

means for controllably supplying fuel to the combustor to permit combustor operation with sustained combustion of the fuel to supplement the energy level of gases passing through the combustor;

means for selectively and intermittently bypassing a portion of the turbocharger charge air flow around the engine to the combustor in response to engine operating conditions;

a jet pump connected between the engine and the turbocharger in-line with said combustor; and

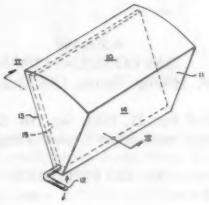


conduit means communicating between said bypass means and said jet pump for driving said jet pump with a portion of the bypassed charge air.

4,356,697
HEAT ENGINES

Eugene W. White, R.D. #2, Box 182, Rossiter, Pa. 15772

Filed Aug. 27, 1980, Ser. No. 181,790
Int. Cl.³ F03G *7/06*
U.S. Cl. 60—682 **14 Claims**



1. A pressure oscillation generation device comprising a chamber having two spaced apart walls, means on the outside of one wall continuously heating said one wall, means on the other of said walls continuously cooling said other wall, a thermal shield movable between said walls, means alternating said thermal shield back and forth between said walls whereby a gas contained in said chamber is alternately heated and cooled thereby causing said gas to undergo alternate expansion and contraction.

4,356,698
STAGED COMBUSTOR HAVING AERODYNAMICALLY SEPARATED COMBUSTION ZONES

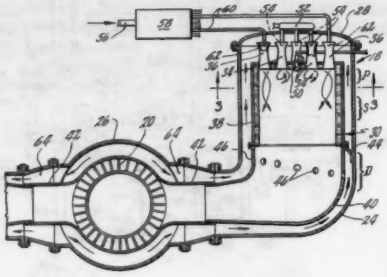
John Chamberlain, Lake Park, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 2, 1980, Ser. No. 193,513
Int. Cl.³ F23R *3/14, 3/32, 3/34*
U.S. Cl. 60—733 **2 Claims**

1. A combustion chamber of the type suited for use in a gas turbine engine and of the type employing primary and secondary combustion zones, wherein the improvement comprises aerodynamic means for separating the zone of primary combustion from the zone of secondary combustion and includes:

one or more primary fuel premixing tubes terminating at the forward end of said combustion chamber and having a highly angled discharged swirler at the downstream end thereof for swirling effluent dischargeable therefrom in

close proximity to the forward end of the chamber to establish the primary combustion zone in that region; and one or more secondary fuel premixing tubes terminating at the forward end of said combustion chamber, but which



are adapted to discharge the effluent therefrom through said primary combustion zone to a secondary combustion zone at a location downstream of said primary combustion zone.

4,356,699

GAS CONDENSATION

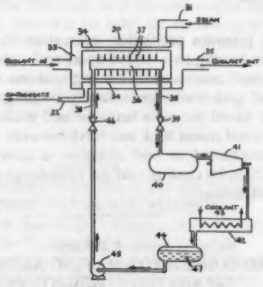
John W. Rilett, Hilltop House, Old Quarry, Bibury, Great Britain

Filed Jan. 21, 1981, Ser. No. 226,827

Claims priority, application United Kingdom, Jan. 2, 1980, 8002190

Int. Cl.³ F17C *13/00*

U.S. Cl. 62—54 **20 Claims**



1. A method of condensing a pressure-liquefiable gas or vapour, said method comprising the steps of:

feeding said gas or vapour into the interior of a closed container;

introducing a liquid derived from said gas or vapour into the interior of a hollow condensing element mounted in said container with its outer surface in contact with the gas or vapor inside the container; and

exhausting the contents of said condensing element to cool the outer surface thereof to a temperature below the condensation temperature of said gas or vapour.

4,356,700

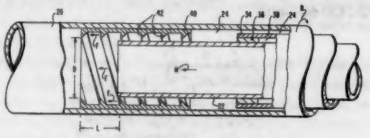
LIQUID COOLANT TRANSFER DEVICE

Phillip W. Eckels, Penn Hills Township, Allegheny County; Donald C. Litz, Murrysville, and Adolphus Patterson, Wilkinsburg, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 20, 1981, Ser. No. 255,907

Int. Cl.³ F17C *7/02*

U.S. Cl. 62—55 **18 Claims**



1. A fluid transfer coupling for introducing a liquid cryogen into a rotating machine, comprising:

a rotatable pipe which is coaxial with and connected to said rotating machine;

a stationary tube which is coaxial with said rotatable pipe and extends into said rotatable pipe; and

threaded means for causing said liquid cryogen to flow axially away from said stationary tube in response to rotation of said rotating machine, said threaded means being disposed in and connected to said rotatable pipe.

4,356,701

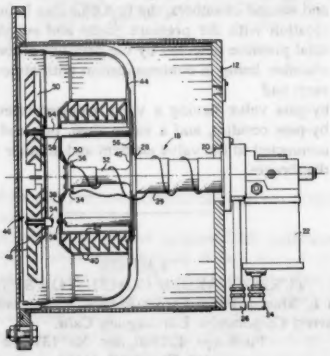
CRYOPUMP

Allen J. Bartlett, Milford, and Robert M. Lewis, Hudson, both of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

Filed May 22, 1981, Ser. No. 266,186

Int. Cl.³ B01D *8/00*

U.S. Cl. 62—55.5 **11 Claims**



1. A cryopump comprising a refrigerator having first and second coaxial stages, a primary cryopanel mounted directly to a low temperature heat sink on the second stage, a radiation shield surrounding the primary cryopanel and coaxial with the refrigerator and in thermal contact with a higher temperature heat sink on the first stage, and a frontal cyopanel extending substantially across an entire opening in the radiation shield, the frontal cryopanel being in thermal contact with the first stage but with the second stage positioned between the frontal cryopanel and the first stage, characterized by:

a high conductance heat flow path from the frontal cryopanel to the higher temperature heat sink, that heat flow path being independent of the radiation shield.

4,356,702

TRANSPORTATION OF PERISHABLE PRODUCTS

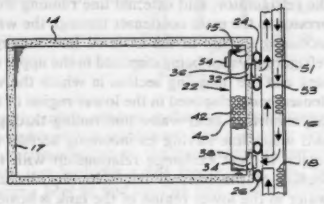
Brian W. Kuttel, Capetown, South Africa, assignor to TransFRESH Corporation, Salinas, Calif.

Filed Dec. 4, 1980, Ser. No. 213,004

Claims priority, application South Africa, Dec. 10, 1979, 79/6691; Jun. 26, 1980, 80/3803; Nov. 6, 1980, 80/6855

Int. Cl.³ F25D *25/00*

U.S. Cl. 62—62 21 Claims



1. A method of transporting perishable food products in a plurality of separate, sealable containers carried in conveyance means having a source supplying a temperature-modifying fluid at a predetermined temperature to said plurality of containers including the step of subjecting said temperature-modifying fluid, when it is inside each of said plurality of containers, to heat exchange with a second fluid that is in direct contact with at least one perishable food product inside said container while maintaining said temperature-modifying fluid and said second fluid separate from each other, said second fluid in at least two of said containers comprising a modified atmosphere suitable for preservation of said at least one perishable food product inside said container.

4,356,703

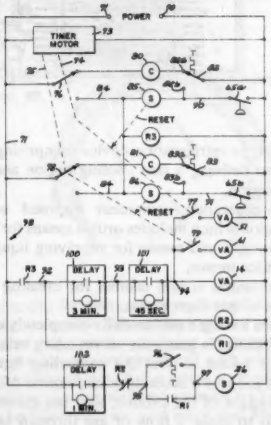
REFRIGERATION DEFROST CONTROL

Kenneth E. Vogel, Mound, Minn., assignor to McQuay-Perfex Inc., Minneapolis, Minn.

Filed Jul. 31, 1980, Ser. No. 174,243

Int. Cl.³ F25D *21/06;* F25B *47/00*

U.S. Cl. 62—155 8 Claims



1. A defrost control system for a refrigeration system of the type which includes a compressor, a condenser, a plurality of evaporators, and interconnection means connected therewith to form refrigerant flow paths therethrough, comprising:

liquid line valve means operable to selectively open or close the refrigerant path from the condenser to the evaporators;

diverting valve means operable to selectively divert hot gas from the compressor through at least one evaporator in a defrost cycle;

said liquid line valve means and said diverting valve means defining a defrost loop including a hot gas path to at least one defrosting evaporator and a liquid refrigerant path from the defrosting evaporator to at least one evaporator which remains in refrigerating mode; and

control means operable in the defrost cycle to open said liquid line valve means to assure excessive refrigerant charge in the defrost loop, then to close said liquid line valve means to allow the system to pump down to a predetermined amount of refrigerant charge in the defrost loop, and then operable to operate said diverting valve means to establish refrigerant flow through said defrost loop.

4,356,704

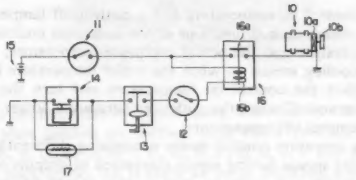
REFRIGERANT COMPRESSOR PROTECTIVE SWITCH SYSTEM

Masao Izumi, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Oct. 2, 1980, Ser. No. 193,260

Int. Cl.³ G05D *23/32;* F25B *1/00*

U.S. Cl. 62—158 5 Claims



1. A protective switch system for an electromagnetically operated clutch of a refrigerant compressor in a refrigeration system of an air conditioner for automotive use, wherein the improvement comprises a parallel combination of a pressure sensitive switch which is responsive to the pressure of the refrigerant to be circulated through said refrigeration system and which is operative to be open in response to a refrigerant pressure lower than a predetermined value on the high pressure side of the system, a positive temperature coefficient resistance element connected in parallel with said pressure sensitive switch, the parallel combination being connected in series with said clutch, and a temperature sensitive switch responsive to the temperature of atmospheric air and operative to be open in response to an atmospheric temperature lower than a predetermined value, said temperature sensitive switch being connected in series with said positive temperature coefficient resistance element.

4,356,705

VEHICLE TEMPERATURE CONTROL APPARATUS

Shinji Sutoh, Konan; Takeshi Harada, and Shinichi Kaneko, both of Higashi Matsuyama, all of Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,647

Claims priority, application Japan, Aug. 20, 1979, 54-105676

Int. Cl.³ F25B *1/00;* B60H *3/04;* A23G *9/00;* G05D *23/00*

U.S. Cl. 62—229 9 Claims

1. A temperature control apparatus for controlling a temperature in an enclosure, comprising:

air flow duct means communicating with the enclosure and having cooling means, heating means and air mix door means for controlling a proportion of air passing through the heating means;

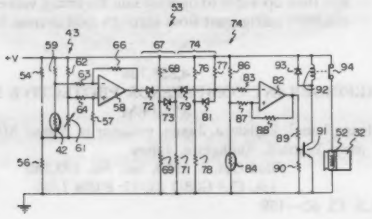
outlet temperature sensor means for sensing an outlet temperature of the cooling means;

set means for setting a command enclosure temperature for the enclosure;

enclosure temperature sensor means for sensing an actual enclosure temperature in the enclosure; and

operation control means for turning the cooling means on and off, the operation control means being constructed to control the cooling means in such a manner that the outlet temperature of the cooling means is controllably varied within predetermined limits in accordance with a difference between the set command enclosure temperature and the actual enclosure temperature to thereby minimize the time the cooling means is energized;

the operation control means being constructed to compute a



control on temperature and a control off temperature as predetermined functions of the command enclosure temperature and the actual enclosure temperature, turn the cooling means on when the outlet temperature is higher than the control on temperature and turn the cooling means off when the outlet temperature is lower than the control off temperature;

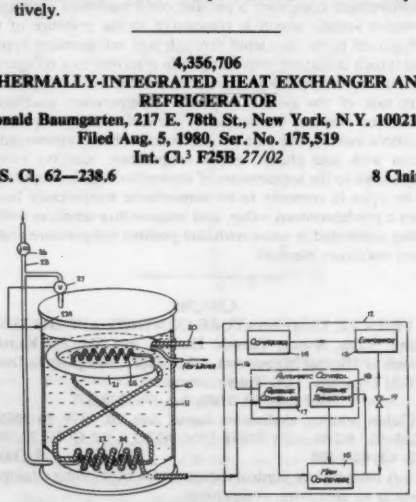
the operation control means comprising differential amplifier means having inputs connected to outputs of the set means and enclosure temperature sensor means respectively, upper and lower clamp means connected to an output of the differential amplifier means and comparator means provided with a hysterisis function and having inputs connected to outputs of the upper and lower clamp means and the outlet temperature sensor means respectively.

4,356,706

THERMALLY-INTEGRATED HEAT EXCHANGER AND REFRIGERATOR

Ronald Baumgarten, 217 E. 78th St., New York, N.Y. 10021

Filed Aug. 5, 1980, Ser. No. 175,519
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.6 **8 Claims**



1. A thermally-integrated system to produce a supply of hot water comprising:

A a heat exchange unit including a water tank filled with unpressurized cold water and means to maintain said unpressurized water in the tank at a predetermined level;

B a compressor-type refrigerator including an internal line conducting a refrigerant in hot vapor form from a compressor to a normally-inactive main condenser, the refrigerant from the main condenser going through an expansion valve into an evaporator which returns the refrigerant to the compressor;

C an external line functioning as an auxiliary condenser for the refrigerator, said external line running from the compressor to the main condenser through the water tank, the incoming section of the external line conveying the hot refrigerant vapor being disposed in the upper region of the tank and the outgoing section in which the vapor is condensed being disposed in the lower region of the tank; and

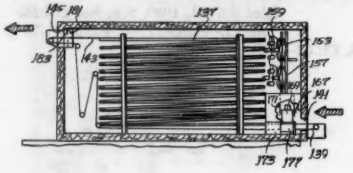
D a pressurized cold water line runing through said tank, said water line having an incoming section in the lower region in heat exchange relationship with the outgoing section of the internal line whereby the unpressurized water in the tank is heated and transfers heat to the pressurized cold water running through the incoming section of the cold water line, the heated tank water in the lower region rising by convection to the upper region of the tank, and having an outgoing section in the upper region in heat exchange relationship with the incoming section of the external line whereby the pressurized cold water is heated in the lower region and its heat is boosted in the upper region.

4,356,707

CRYOGENIC CABINET FREEZER

Lewis Tyree, Jr., 145 Briarwood Ave., North, Oak Brook, Ill. 60521; James R. Missig, Joliet, and George D. Rhoades, La Grange, all of Ill., assignors to Liquid Carbonic Corporation, Chicago, Ill., by said James R. Missig and George D. Rhoades

Continuation-in-part of Ser. No. 144,594, Apr. 28, 1980. This application Jan. 30, 1981, Ser. No. 229,923
Int. Cl.³ F25D *25/02*
U.S. Cl. 62—381 **21 Claims**



1. A cabinet-type refrigeration device comprising

cabinet means defining a first cooling region and a second adjacent region,

refrigeration-generation equipment disposed within said second region which includes orifice means for expanding a liquid cryogen and means for supplying liquid cryogen to said orifice means,

fan means mounted in said cabinet for creating a primary circulation of gas therewithin,

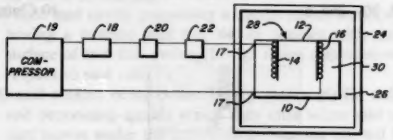
inducer means having a substantially completely open flared entrance located in generally surrounding relationship to said orifice means so that the expanding liquid creates vapor and induces a secondary circulation of gas within said first region of the cabinet, said fan means being located so as to cause a flow of gas through said inducer means even when liquid is not being expanded,

means for sensing the temperature within said cabinet,

means for modulating the continuous flow of liquid cryogen through said orifice means in response to changes in the temperature sensed, and

means for removing cryogen vapor from said cabinet.

4,356,708
MARINE REFRIGERATION SYSTEM
Cleaveland F. Horton, 198 Dover Point Rd., Dover, N.H. 03820
Filed Feb. 19, 1981, Ser. No. 235,439
Int. Cl.³ F25D *11/00*
U.S. Cl. 62—430 **7 Claims**



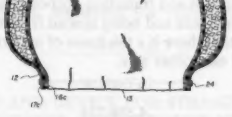
1. In a refrigeration system including a compressor that operates intermittently, a condenser, and a cooling coil connected in fluid communication, the improvement comprising a holdling plate that includes a fast freeze zone, said holding plate conducting heat to said cooling coil, said holdling plate including:

a closed tank that surrounds said cooling coil,

a support structure for said cooling coil that projects from one wall of said tank into the interior of said tank, said support means (i) having a convexly curved outer surface that mounts said coil with substantially continuous contact therebetween, (ii) being formed integrally with said one wall, (iii) having a sufficient cross-sectional thickness to provide a highly efficient thermal path between the interior of said tank and said one wall to provide said fast freeze at the outer surface of said one wall, and (iv) located within said tank so that said coils are spaced from the walls of said tank, and

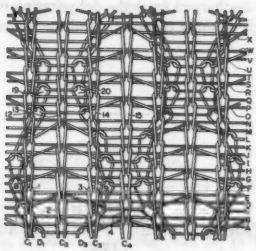
an anti-freeze liquid held in said tank that acts as a cold reservoir and enhances the flow of thermal energy from the side and bottom walls of said tank to said coil, said liquid typically being spaced from the upper wall of said tank.

4,356,709
ICE CAP
Dixie F. Alexander, 6390 Center Dr., Redding, Calif. 96001
Filed Mar. 2, 1981, Ser. No. 239,390
Int. Cl.³ F25D *3/08, 23/12*
U.S. Cl. 62—530 **1 Claim**



1. An ice cap for therapeutic treatment of a wearer's scalp comprising, in combination, a bag having a substantially circular, marginal edge portion defining an opening for receiving the upper portion of a wearer's head with said bag in complete overlying relationship with the entire scalp of the wearer, said bag including an outer wall and an inner wall defining a sealed cavity to be filled with ice, said inner wall and said outer wall each include an inner and outer laminate, the inner laminates of said inner and outer walls being formed of moisture-impervious plastic material and the outer laminates of said inner and outer walls being formed of textile cloth material, said bag outer wall having an opening for filling said cavity with ice and a detachable closure for closing said opening and an elastic band connected to said bag extending throughout said bag marginal edge portion for retaining said bag in the worn position on the wearer's head, wherein said closure and the outer surface of said outer wall adjacent said opening are provided with a Velcro device for detachably mounting said closure in closing relationship with said opening, wherein the marginal edges of said inner and outer walls and said elastic band are secured together by stitching in overlying relationship.

4,356,710
INTERLOCK FABRIC WITH LINING
Toshio Mizuno, Nishinomiya, and Shiro Kibata, Iida, both of Japan, assignors to Mizuno Corporation, Osaka, Japan
Filed Mar. 11, 1980, Ser. No. 129,212
Claims priority, application Japan, Mar. 12, 1979, 54-29228
Int. Cl.³ D04B *7/04, 7/16*
U.S. Cl. 66—196 **6 Claims**



1. An interlock fabric with a lining wherein, for the front fabric, plain stitches are formed using 100% synthetic fiber yarns, A, B, D, E, G, H, J, K, M, N, P, Q, S, T, V and W, and for the back fabric, use is made of yarns including a natural fiber having excellent sweat-absorption C, F, I, L, O, R, U and X whereby there are twice as many front vertical rows (C_1, C_2, C_3, C_4) as back vertical rows (D_1, D_3) and the back yarns C, F, I and L form purls at the back vertical rows D_1, D_3 and at the same time, are connected to the knits at the front vertical row C_2, while the back yarns O, R, U and X form purls at the back vertical rows D_1, D_3 and at the same time, are connected by a tuck stitch at the front vertical row C_4, so that the front fabric has a flat surface due to the plain stitch and the back fabric has honeycomb-like gaps a due to the tuck stitch.

4,356,711
DEHYDRATOR
Shizuo Okazaki, Aichi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Sep. 25, 1980, Ser. No. 190,889
Claims priority, application Japan, Sep. 29, 1979, 54-126683; Nov. 12, 1979, 54-146801; Nov. 14, 1979, 54-158283[U]; Feb. 28, 1980, 55-25165[U]
Int. Cl.³ D06F *29/02*
U.S. Cl. 68—23.5 **14 Claims**

1. A dehydrator which comprises:

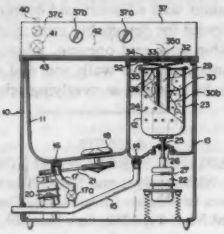
a housing;

a centrifugal dehydrating tank rotatably supported on the housing;

a water spray cylinder having a peripheral wall formed by sintering and prepared from a porous material having a larger number of fine water-permeable holes and set in place concentrically with the dehydrating tank, and whose interior defines a water-receiving cavity;

means for rotating the dehydrating tank and water spray cylinder, said cylinder being sufficiently rigid to withstand centrifugal forces developed by said rotating means;

means for supplying water to the water-receiving cavity; and



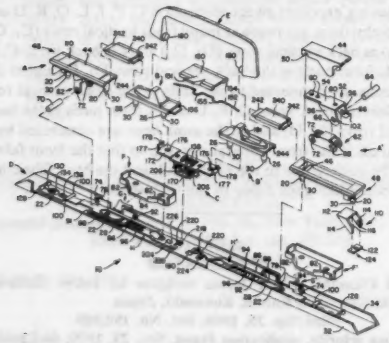
means for drawing off from the housing the water centrifugally ejected from the water-receiving cavity and centrifugally discharged from the dehydrating tank after passing through washing placed around the water spray cylinder.

4,356,712

HARDWARE ASSEMBLY FOR LUGGAGE AND THE LIKE

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Jun. 9, 1980, Ser. No. 157,616
Int. Cl.³ E05B *65/52, 37/02, 15/16*
U.S. Cl. 70—69 **41 Claims**



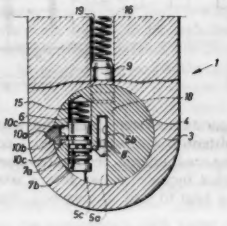
1. A hardware assembly for luggage and the like comprising a latch, means for pivotally supporting the latch on a first part of a luggage case for movement between open and closed positions; control means supported for movement along the case, the control means having catch elements which are engageable with cooperating catch elements associated with the latch to hold the latch in the closed position; manual actuator means; and means for pivotally supporting the manual actuator means on the case adjacent to the latch, the manual actuator means being movable between a rest position and a release position, and being engageable with the control means for moving the control means in a direction to disengage the catch elements and release the latch for movement to the open position when the manual actuator means is moved to the release position.

4,356,713

CYLINDER LOCK AND KEY

Bo G. Widen, Torshälla, Sweden, assignor to GKN Stenman, AB, Eskiltuna, Sweden

Filed Jul. 2, 1980, Ser. No. 165,358
Claims priority, application Sweden, Jul. 10, 1979, 7906023
Int. Cl.³ E05B *27/06*
U.S. Cl. 70—364 A **20 Claims**



1. The combination of a cylinder lock and a key therefor comprising:
(a) a housing;
(b) a cylinder core mounted for rotation in said housing;
(c) a slot extending into the cylinder-core parallel to the rotational axis thereof for receiving the key;
(d) a row of locking pins of circular cross section guided in bores in said cylinder core, which bores intersect over parts of their lengths with said slot, the pins being movable against spring means when a key is inserted into said slot and the centre lines of the pins lying in a plane;
(e) said key comprising a blade having a longitudinally extending edge a portion of which at one side of the blade affords a coded surface of engaging end portions of the pins, said coded surface including,
(f) code portions for holding respective pins in predetermined positions by engaging only a segment of said end portion of each pin spaced from the pin centre line when the key is in an operative position in said slot thus to release the cylinder core for rotation, and
(g) transition portions which extend lengthwise between adjacent code portions and which engage and guide the pins substantially for the whole of the distance between adjacent code portions as the key is moved into and out of its operative position, each transition portion having a concavely curved cross-sectional shape transverse to its length and which is constant over the whole length of the transition portion so that the portion has an arcuate region of engagement with a pin as the latter is guided by the transition portion between adjacent code portions.
(h) the code portions and transition portions being open to said one side of the blade and being spaced from the other side of the blade so that there is a thickness of material between said portions and said other side.

4,356,714

APPARATUS FOR DETECTING FAULTS IN THE INHERENT FLATNESS OF A STRETCHED STRIP IN MOVEMENT

Andre Quehen, Pontoise, France, assignor to SECIM, Courbevoie, France

Filed Oct. 7, 1980, Ser. No. 195,063
Claims priority, application France, Oct. 26, 1979, 79 26618
Int. Cl.³ B21B *37/12*
U.S. Cl. 72—17 **4 Claims**

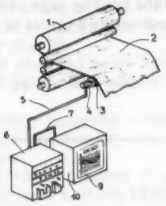
1. Apparatus for detecting faults in the inherent flatness of a stretched moving strip, comprising
(a) a deflector roll (3) over which the strip passes, said roll comprising an inner cylinder covered by a thin cylindrical casing (12);

(b) cavities (14, 15, 16, 17) of small dimension machined in the side surface of said cylinder so as to constitute at least one group of apertures arranged discontinuously over said surface, the centers of said cavities being located on a helix coaxial with said roll and in angular positions spaced apart by $2\pi/n$, with n an integer, if one rotation of the roll about its axis is concerned;

(c) each said cavity containing a displacement sensor (41, 42) having a moving part (43, 44) in contact with the inner surface of said thin casing (12) for radial displacement with respect to said roll;

(d) said sensors being connected by means (6) for collecting and processing signals which they emit when said moving part moves under the action of the stresses exerted by said strip on said thin casing;

(e) said sensors (41, 42) each comprising a primary winding and a secondary winding through which a moving ferromagnetic core passes, solid with said moving part (43, 44) of said sensor, modifying by its displacements the signal emitted by said secondary winding when said primary winding is supplied with electric current;



(f) an optical encoding system (50) for very precise marking of the angular position of said roll (3); and

(g) a programmable apparatus using data supplied by said optical encoding system (50) for emitting a current pulse to said primary winding of each sensor once under load when said strip is at said sensor and once not under load;

(h) said means (6) for collecting and processing the signals emitted by said sensors (41, 42) at their secondary windings comprising

(i) means for measuring the value of the secondary current at a moment predetermined with respect to the beginning of the pulse;

(ii) means for converting this value into numerical form;

(iii) means for storing all the numerical values;

(iv) means for callculating the differences in said numerical values corresponding to each of said sensors under load and not under load; and

(v) means (9) for displaying the results relating to each sensor.

4,356,715

METHOD AND DEVICE FOR STRAIGHTENING ELONGATED DRAWN ROUND STOCK

Erwin Bock, and Walter Wetzels, both of Aachen, Fed. Rep. of Germany, assignors to Schumag GmbH, Aachen, Fed. Rep. of Germany

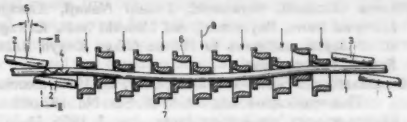
Filed Sep. 11, 1980, Ser. No. 186,118

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 2937635; May 30, 1980, 3020536

Int. Cl.³ B21D *3/02, 3/04;* **B21F** *1/02;* **B21B** *19/12*

U.S. Cl. 72—98 **37 Claims**

1. Method for straightening elongated drawn round stock, which comprises simultaneously advancing the stock in the longitudinal direction, rotating the stock about the longitudinal axis thereof and deflecting the stock from a straight line exceeding the yield point thereof in a straightening arc, subjecting the surface of the stock to friction forces acting in the longitudinal direction during the deflection, and superimposing shorter straightening arcs on the first-mentioned straightening arc.



4,356,716

BENDING MACHINE

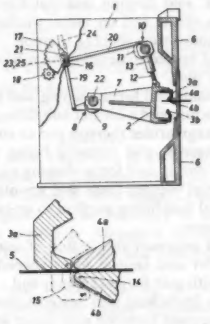
Hans Aschauer, Eferding, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 13, 1980, Ser. No. 159,400

Claims priority, application Austria, Jun. 20, 1979, 4340/79

Int. Cl.³ B21D *5/04*

U.S. Cl. 72—322 **7 Claims**

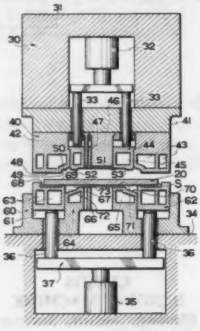


1. In a bending machine for flanging a sheet metal element, comprising a frame, retaining rams mounted in the frame and operable to grip the sheet metal element, the rams cooperating to define a plane for the gripped sheet metal element, a bending tool mounted in the frame for movement around a respective one of the rams for bending the sheet metal element in cooperation with the respective ram, and two drive means operable independently of each other, a first one of the drive means being operatively connected to the bending tool for moving the bending tool in a first direction substantially parallel to the plane and a second one of the drive means being operatively connected to the bending tool for moving the bending tool in a second direction transversely to the plane, one of the drive means being a crank drive: the improvement of the crank drive including a rigid, one piece connecting rod connected to the crank drive, the bending tool being mounted on the rigid, one piece connecting rod of the crank drive, and the other drive means being connected to the connecting rod of the crank drive.

4,356,717
METHOD AND APPARATUS FOR FORGE-SHAPING SHEET MEMBERS

Hiromu Okunishi, Sayamashi; Hideki Nakaji, Kawagoeshi; Hiroyuki Suwa, Sayamashi, and Hideaki Sato, Kawagoeshi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 782,407, Mar. 29, 1977, abandoned.
This application Aug. 28, 1980, Ser. No. 182,080
Claims priority, application Japan, Apr. 2, 1976, 51-36733
Int. Cl.³ B21J *13/02*
U.S. Cl. 72—342 8 Claims



1. A method of forge-shaping a brake disk, comprising the steps of:

heating a starting material to a predetermined temperature for attaining a hardness of 30 to 45 HRC required for said brake disk, said starting material having a flat standard steel plate shape and an initial thickness greater than a final thickness after shaping thereof;

inserting said heated material as kept heated between upper and lower dies;

strongly pressing and forge-shaping said material at an annular disk portion and a central hub-fitting portion thereof to remove irregularities thereon and to attain parallelism and flatness thereof, said material being plastically radially deformed during said forge-shaping such that a portion of said material escapes from said annular disk portion and said central hub-fitting portion to an intermediate portion therebetween;

drawing said intermediate portion of said material between said annular and central forge-shaped portions simultaneously with said forge-shaping; and

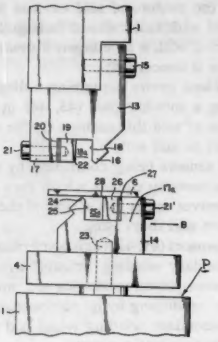
continuously quenching said heated material while it is kept strongly pressed between said upper and lower dies.

4,356,718
BENDING TOOL

Osamu Makino, 1-15, Bubai-cho, Fuchu-shi, Tokyo, Japan

Filed Oct. 16, 1980, Ser. No. 197,733
Claims priority, application Japan, Oct. 25, 1979, 54-138376
Int. Cl.³ B21D *5/01, 37/10*
U.S. Cl. 72—389 6 Claims

1. A bending tool for bending a sheet material into a section, comprising a first bending member having a first bending projection formed with a bending edge of a substantially right angle and a first groove having a predetermined depth and an adjustable width and disposed in juxtaposition with said first bending projection, and a second bending member having a second bending projection formed with a bending edge of a substantially right angle and a second groove having a predetermined depth and an adjustable width and disposed in juxtaposition with said second bending projection, wherein said first and second bending members are disposed to be movable in opposition to each other in such a manner that a perpendicular bisector extending through the apex of the bending edge of said first bending projection passes substantially a center of

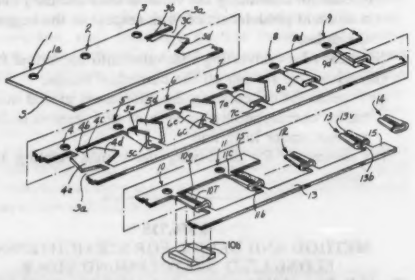


said second groove, while a perpendicular bisector extending through the apex of the bending edge of said second bending projection passes substantially a center of said first groove.

4,356,719
MANDREL JAW AND METHOD OF MANUFACTURE

Clarke R. Sutherland, East Bridgewater, and Frederick A. Skinner, Peabody, both of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Jun. 9, 1980, Ser. No. 157,226
Int. Cl.³ B21D *28/10, 43/28*
U.S. Cl. 72—391 16 Claims



1. A mandrel pulling jaw for setting rivets, said jaw comprising:

a central body formed with a generally triangular flat surface and a conical outer surface;

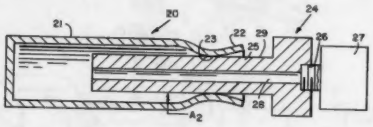
a first and a second arm attached to said body, said first arm being shorter than said second arm, said first arm being folded over and disposed upon said body and said second arm being folded over and disposed upon said first arm;

a central groove disposed within said jaw and extending longitudinally from the apex of said body to the base and a plurality of teeth disposed transversely to said groove.

4,356,720
BURST-PRESSURE TEST FIXTURE FOR PRESSURE VESSELS DYNAMIC ROCKET MOTORS

Robert E. Betts, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 4, 1981, Ser. No. 231,206
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—37 **4 Claims**



1. In a vented pressure vessel having a tubular plug and guage adapter member provided with a pressure gauge therein for measuring the pressurization to burst pressure, said tubular plug and gauge adapter for insertion into the vent opening of said vented pressure vessel for substantially plugging said vent opening during burst testing, the method of burst testing said vented pressure vessel having an internal means for pressurization comprising the steps of:

(i) mounting said plug and gauge adapter in a stationary position so that said tubular member is horizontally positioned;

(ii) inserting a pressure gauge that is integrally mounted with a pressure gauge tube member into said plug and gauge adapter member;

(iii) coating said tubular member of said plug and gauge adapter member with a silicon lubricant to facilitate the positioning of a vented pressure vessel on said tubular member while substantially plugging the vent opening of said vented pressure vessel;

(iv) positioning a vented pressure vessel to be burst tested on said silicon lubricated tubular member, said vent opening of said plug and gauge adapter member being substantially plugged by said tubular member, said vented pressure vessel being provided with means for pressurization that is mounted within said vented pressure vessel; and,

(v) pressurizing said vented pressure vessel at a predetermined rate to effect bursting of said vented pressure vessel as said vented pressure vessel is moving at a predetermined rate in an outward direction along said tubular member, said bursting being effected prior to said vented pressure vessel exiting from said tubular member; and,

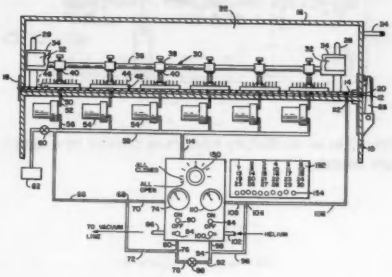
(vi) measuring said pressure at which bursting of said vented pressure vessel takes place which is the true burst pressure of said vented pressure vessel tested under dynamic conditions.

4,356,721
GLASS LEAD SEAL TEST APPARATUS

James W. White; Victor W. Ruwe, and Donald R. Davis, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 19, 1980, Ser. No. 218,235
Int. Cl.³ G01M *3/20*
U.S. Cl. 73—40.7 **3 Claims**

1. Glass lead seal test apparatus comprising a base member, seal means mounted on the base member, a cover mounted to the base and being moveable into and out of sealing relationship with said seal means and defining a chamber with said seal means, a clamp down assembly removably mounted relative to said base and being adapted for clamping microcircuit packages into sealing relationship with said seal means with said microcircuit packages having leads therein with glass seals between each lead and the structure of the microcircuit package and defining a chamber with said seal means, said base member having first passage means for communicating with the chamber defined by said microcircuit package and said seal means, a second passage means through said base member and communicating with said chamber defined by said cover and said seal means, first control means connected to said first and second passage means for pulling a vacuum on the chamber of said microcircuit package and said chamber defined by said cover and said seal means, second control means connected to said second passage means and adapted for filling said chamber defined by said cover and said seal means with an inert gas, second control means connected with said first passage means for pulling a vacuum thereon and having means for testing for



any leakage of said inert gas leaking past said glass lead seals into said chamber defined by said microcircuit package and said seal means and into said first passage means, said clamp down assembly being designed to clamp a multiplicity of microcircuit packages in sealing relationship with said seal means to define a chamber between each microcircuit package and said seal means and said first passage means including a multiplicity of passages with an individual passage communicating with a respective chamber of a microcircuit package, and said means for testing including means for individually switching from the chamber of each microcircuit package to the other until all microcircuit packages have been tested.

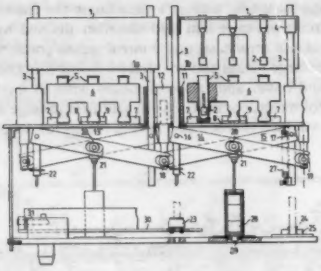
4,356,722
APPARATUS FOR TESTING A LIQUID SAMPLE

Roger A. Bunce; John H. Kennedy; Larry J. Kricka, all of Birmingham, and Thomas P. Whitehead, Leamington Spa, all of England, assignors to The Secretary of State for Social Services in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 5, 1980, Ser. No. 203,572
Claims priority, application United Kingdom, Nov. 8, 1979, 7938739
Int. Cl.³ G01N *35/00*
U.S. Cl. 73—53 **15 Claims**

1. Apparatus for testing at least one liquid sample, by immersion therein of a probe for coaction between said probe and sample, having a reloadable sample carrier for at least one sample container; a reloadable probe carrier for at least one probe; a frame having locating means for relatively locating the sample carrier and the probe carrier laterally in the frame; parallel motion means for guiding the probe longitudinally into the sample container and stop means for locating the probe at a predetermined distance into the sample container; locking means preventing the probe from being withdrawn more than a predetermined distance in the outward direction from the sample container; timing and control means for releasing said locking means after a predetermined time; self-acting withdrawal means for withdrawing the probe and probe carrier to a position clear of the sample container; the said sample carrier and probe carrier being arranged so as to be severally removable away from said frame; and oscillating means which can

oscillate the probe carrier longitudinally through a small distance in relation to the sample carrier; whereby the probe may



be moved in an oscillatory manner in relation to a sample in a sample container.

4,356,723

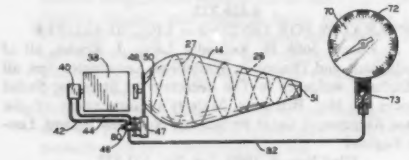
PROCESS AND APPARATUS FOR CONTINUOUSLY MEASURING SLUMP

Robert W. Fay, Fort Wayne, Ind., assignor to Royal W. Sims, Salt Lake City, Utah

Continuation of Ser. No. 618,751, Oct. 2, 1975, abandoned, which is a continuation of Ser. No. 218,370, Jan. 17, 1972, abandoned. This application Nov. 17, 1977, Ser. No. 852,344

Int. Cl.³ G01N *11/00, 33/38*

U.S. Cl. 73—54 **1 Claim**



1. A process for continuously monitoring the slump of an aggregate while it is unset comprising the steps of: continuously rotating a charge of aggregate within a container having flights therein, coupling the rotatable container to the output drive of a positive drive engine through a closed circuit hydraulic transmission drive having a variable displacement pump and a fixed displacement motor to effect continuous rotation and counterrotation of the container by wobble plate control at a substantially constant speed, communicating during rotation and counterrotation of the bowl the variable hydraulic pressure of the hydraulic transmission through a chamber of said motor to a gage to provide a gage output reading of the pressure, and correlating the variable gage pressure to the slump of a fixed aggregate load at calibrated engine speeds whereby the hydraulic pressures of said motor can be directly related to slump at calibrated engine speeds during rotation or counterrotation of said container, the steps of continuously monitoring slump independently of the direction of rotation of said container, and adjusting the slump to a prescribed value by adjusting the liquid content of said aggregate.

4,356,724

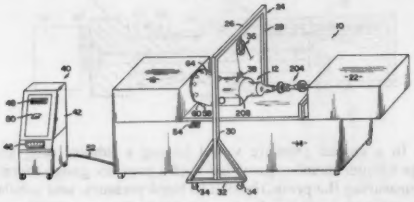
APPARATUS AND METHOD FOR TESTING TRANSMISSIONS

Stephen J. Ayoub, 900 Rolling Hills Dr., Palm Harbor, Fla. 33563; Douglas MacPherson, Tampa, and Thomas Rizzo, Dover, both of Fla., assignors to Stephen J. Ayoub, Palm Harbor, Fla.

Filed Sep. 11, 1980, Ser. No. 186,170

Int. Cl.³ G01M *13/02*

U.S. Cl. 73—118 **39 Claims**



1. An apparatus for testing automatic vehicular power transmissions, comprising in combination:

a base;

a drive shaft rotatably disposed relative to said base;

drive means connected to said drive shaft for rotating said drive shaft;

an adaptor plate rigidly connected to said drive shaft;

means for connecting the torque converter of the test transmission relative to said adaptor plate;

a turret tube disposed relative to said base;

said drive shaft being rotatably disposed within said turret tube;

a turret plate rigidly connected to the distal end of said turret tube;

means for connecting the transmission bell housing of the test transmission relative to said turret plate;

a load shaft rotatably disposed relative to said base;

means for connecting said load shaft to the output shaft of the test transmission; and

load means for imparting a loading torque on said load shaft thereby loading the output shaft of the test transmission.

4,356,725

TESTING THE POWER OF A TURBOCHARGED INTERNAL COMBUSTION ENGINE

Lee R. Armstrong, Newtonville, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,836

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—118 **2 Claims**

1. The method of determining the power-producing potential of a turbocharged diesel engine, comprising the steps of:

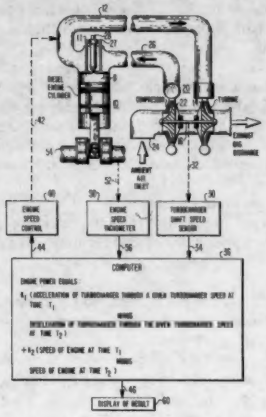
burst accelerating the engine from a low idle speed to a high idle speed, and allowing the engine to decelerate to the low idle speed,

sensing the turbocharger shaft speed during said acceleration and deceleration,

determining the turbocharger acceleration A_{TA} at a given turbocharger speed,

determining the turbocharger deceleration A_{TD} at said given speed, and

determining the engine power using the formula:



$$P_E = K(A_{TA} - A_{TD}),$$

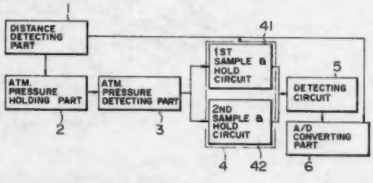
where K is an empirically-determined constant such as 0.9.

4,356,726

APPARATUS FOR DETECTING GRADE OF VEHICLE FROM ATMOSPHERIC PRESSURE DIFFERENCE

Yasuhisa Yoshino, Okazaki, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 1, 1980, Ser. No. 211,939
Claims priority, application Japan, Dec. 7, 1979, 54-159603
Int. Cl.³ G01C *21/00*
U.S. Cl. 73—178 R **4 Claims**



1. An apparatus for detecting a grade traversed by a vehicle from atmospheric pressure difference comprising:

means for detecting a travelling distance of a vehicle to generate an output signal at every predetermined travelling distance of the vehicle;

means connected to said distance detecting means and having two chambers, for holding the atmospheric pressure in alternate one of the two chambers in response to the output signal of said distance detecting means;

means connected to said atmospheric pressure holding means, for detecting a pressure difference between the two chambers to generate an output signal;

sample and hold means connected to said pressure difference detecting means and said distance detecting means and having two sample and hold circuits, for sampling and holding the output signal of said pressure difference detecting means in alternate one of the two sample and hold circuits in response to the output signal of said distance detecting means; and

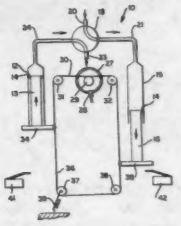
means connected to said sample and hold means, for comparing output signals held by said two sample and hold circuits to generate an output signal representative of a grade traversed by said vehicle.

4,356,727

CONTINUOUS VOLUME MEASURING SYSTEM

Carole E. Brown, 3385 Ebenezer Rd., Conyers, Ga. 30207; Dean M. Ball, 3596 Spaulding Ter., Norcross, Ga. 30071; Graham R. Killip, 3478 Pin Oak Cir., Doraville, Ga. 30340, and James P. Olivier, 1841 Azalea Dr., Lawrenceville, Ga. 30245

Filed Mar. 7, 1980, Ser. No. 128,129
Int. Cl.³ G01F *3/18, 3/20*
U.S. Cl. 73—243 **9 Claims**



6. An apparatus for measuring the volume of a flowing fluid comprising:

a first chamber having a variable volume;

a second chamber having a variable volume;

first conduit means for diverting said fluid flow from an input conduit into said first chamber to fill said first chamber and expand the volume thereof;

coupling means for contracting the volume of said second chamber responsive to expansion of said first chamber to force fluid therefrom through a second conduit means to an output conduit;

valve means responsive to said first chamber being filled to a predetermined volume for connecting said input conduit to said second conduit means to fill said second chamber and for connecting said first conduit means to said output conduit to empty said first chamber, said coupling means contracting said first chamber as said second chamber expands;

detector means continuously responsive to change in volume of one of said chambers for continuously providing a signal corresponding to a volume of fluid forced into said output conduit; and

means for controlling the temperature of said fluid in said input conduit.

7. A method of measuring the volume of a flowing fluid comprising the steps of:

diverting said fluid from an input conduit into a first expandable chamber to fill said chamber and expand the volume thereof;

contracting the volume of a second expandable chamber responsive to expansion of said first chamber to force fluid from said second chamber;

responsive to said first chamber being filled to a predetermined volume, diverting said fluid to fill said second chamber while contracting said first chamber to force fluid therefrom;

continuously detecting the change in volume of at least one of said chambers;

continuously providing a signal corresponding to the volume of fluid forced from said chambers; and

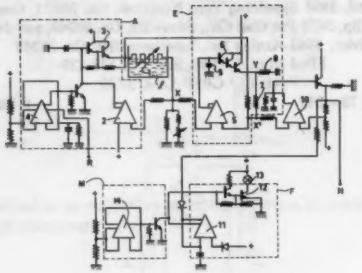
controlling the temperature of said fluid in said input conduit.

4,356,728

DEVICE FOR MEASURING THE LEVEL OF A LIQUID

Michel Gomez, Joinville-Le-Pont, France, assignor to e.d. VEGLIA, France

Filed May 15, 1980, Ser. No. 149,170
Claims priority, application France, May 21, 1979, 79 12908
Int. Cl.[3] G01F *23/24;* G01K *7/16*
U.S. Cl. 73—295 2 Claims



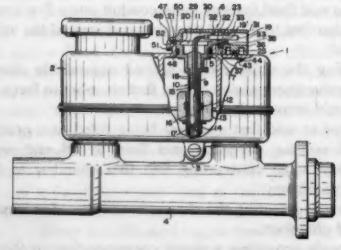
1. A device for measuring the level of a liquid in a tank comprising a high temperature coefficient sensor immersed in the liquid, a circuit for generating a constant current and connected to the output of the sensor for delivering a voltage indicative of the resistance of the sensor, means for activating cyclically said circuit, a temperature compensating circuit comprising a first comparator to which said voltage is applied and first capacitor connected to the output of said first comparator, the output of said compensating circuit delivering a compensated voltage indicative of the level of the liquid irrespective of the initial liquid and ambient temperature, a memory circuit comprising a second comparator having one input connected to earth and receiving said compensated voltage on the other input and a second capacitor connected to the output of said second comparator, a circuit for generating a saw-tooth signal, a third comparator, the output signal of the memory circuit and the saw-tooth signal circuit being applied to the inputs of said third comparator, and a galvanometer connected to the output of said third comparator.

4,356,729

FLUID LEVEL DETECTOR

Hitoshi Kubota, Fujisawa, and Tcshiyuki Takahashi, Hayama, both of Japan, assignors to Nissan Motor Co., Ltd. and Nippon Air Brake Co., Ltd., both of, Japan

Filed Jun. 2, 1980, Ser. No. 155,043
Claims priority, application Japan, Jun. 7, 1979, 54-71487
Int. Cl.[3] G01F *23/10, 23/12*
U.S. Cl. 73—308 4 Claims



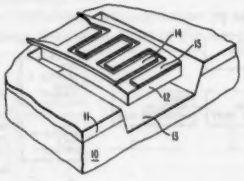
1. A fluid level detector assembly comprising:
a cylindrical member including an upper mounting portion adapted to be received in the opening of a fluid reservoir, said cylindrical member having a float guide portion adapted to extend downwardly into the reservoir, a terminal holder integral with and extending generally radially from said mounting portion of said cylindrical member, said terminal holder having a generally upwardly facing surface with a plurality of recesses therein for receiving terminals;
a float having a magnet disposed therein, said float being slidably mounted on said float guide portion,
a switch disposed within said float guide portion, said switch being responsive to the position of said magnet;
terminals connected to said switch via leads, said terminals being supported in said recesses of said terminal holder; and
a lid member comprising:
an upper cover having a terminal retaining portion retaining the upper sides of said terminals in said recesses in said terminal holder; and
a lower cover connected to said upper cover and provided with a terminal holder retaining portion contacting the lower side of said terminal holder;
said upper cover and terminal holder cooperatively clamping said terminals between them and in place in said recesses on said terminal holder with said terminal holder abutting both said upper and lower covers;
whereby said cylindrical member with said leads extending from said switch mounted therein to terminals supported in said recesses of said integral terminal holder is secured to said lid member and the resultant assembly unit may be secured in the opening of a fluid reservoir.

4,356,730

ELECTROSTATICALLY DEFORMOGRAPHIC SWITCHES

Paul E. Cade, Colchester, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,522
Int. Cl.[3] G01P *15/08*
U.S. Cl. 73—517 R 13 Claims



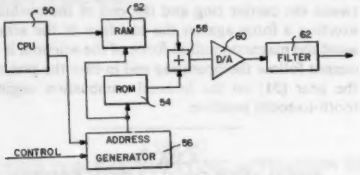
1. An improved deformographic device comprising:
a body of semiconductive material of a first conductivity type,
a layer of semiconductive material of a second conductivity type on said body,
an opening in said layer extending through said layer and exposing said body,
a coating of insulating material disposed over said layer of said second conductivity type,
a defined beam of said insulating material extending from said coating of insulating material over said opening,
a pair of electrodes disposed on said beam, and
means coupled to said electrodes for independently applying to each of said electrodes, with respect to said body, a threshold voltage, said threshold voltage being sufficient to create an electrostatic attraction between both of said electrodes and said body sufficient to overcome the bending stresses in said beam when applied to both of said electrodes but insufficient to overcome the bending stress in said beam when applied to only one of said electrodes.

4,356,731

METHOD AND MEANS FOR GENERATING TIME GAIN COMPENSATION CONTROL SIGNAL FOR USE IN ULTRASONIC SCANNER AND THE LIKE

John E. Mahony, Sacramento, Calif., assignor to General Electric Company, Ranco Cordova, Calif.

Filed Nov. 3, 1980, Ser. No. 203,661
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—631 11 Claims



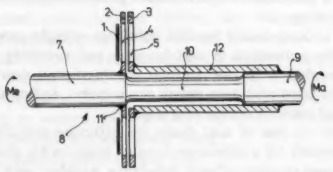
1. A method of generating a time gain compensated signal in an ultrasonic scanner and the like comprising the steps of generating electrical signals in response to reflections of an ultrasonic wave, applying said electrical signals to a variable gain amplifier, storing digital codes indicative of desired gains in a random access memory, selectively addressing said random access memory whereby a variable digital code is obtained, applying said digital code to a digital to analog converter means to thereby derive an analog control signal, and applying said analog control signal to control the gain of said variable gain amplifier.

4,356,732

TORQUE AND TORSION ANGLE MEASURING APPARATUS

Hansjörg Hachtel, Weissach, and Klaus Dobler, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,589
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951148
Int. Cl.³ G01L *3/10*
U.S. Cl. 73—862.33 20 Claims



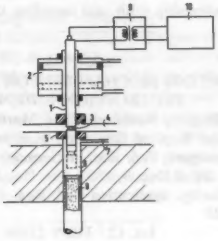
1. Torque and torsion angle measuring apparatus comprising
a shaft (8) having an input end portion (7) and an output end portion (9);
a first induction member (2) concentric to said shaft and mounted on said input end portion for rotation therewith, said first induction member having electrically conductive portions (6) and electrically insulating portions (4);
a second induction member mounted on said output end portion for rotation relative to said first induction member, said second induction member having electrically conductive portions (3) and electrically insulating portions (5) overlapping corresponding portions of said first induction member to a predetermined extent prior to application of a torque to be measured;
a coil (1) at least approximately concentric to said shaft arranged in close proximity to said first and second induction members so that a magnetic field generated by said coil creates eddy currents in said second induction member varying in dependence upon the relative alignment of said electrically conductive portions of said first and second induction members, to effect a change in inductivity of said coil upon change in eddy currents to provide a measure of angular displacement of the input end portion to the output end portion of said shaft.

4,356,733

DOSING DEVICE FOR GAS CHROMATOGRAPHY

Max Braunweiler, Mannheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,234
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942395
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—863.11 14 Claims



1. In a dosing device for gas chromatography which includes a portion coupled to the sampling stream, a sample evaporation chamber for coupling to the separation column of the gas chromatography device and a dosing plunger having a dosing volume, in the form of a recess formed therein, slidable between a sample-receiving position where it is in communication with the sample stream and a sample evaporating position where it is in communication with the sample evaporation chamber, the improvement comprising:
(a) the portion of the dosing plunger carrying said dosing volume being made of a highly heat conducting material; and
(b) means for heating said dosing plunger in the area of said dosing volume rapidly, said means including a high capacity current source, whereby, utilizing said high capacity current source, said dosing plunger can be quickly brought to a high temperature and heat transferred from said dosing plunger to the sample in the sample chamber for heating said sample.

4,356,734

SOIL SAMPLING DEVICE

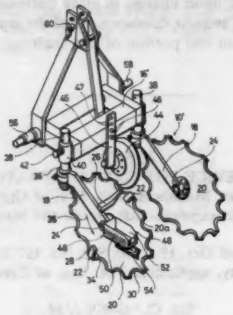
Jozsef Ivancsics, Szekszard, Hungary, assignor to Dalmandi Allami Gazdasag, Dalmand, Hungary

Filed Jul. 6, 1979, Ser. No. 55,335
Int. Cl.³ G01N *1/08*
U.S. Cl. 73—864.31 6 Claims

1. A soil sampling device adapted for attachment to a vehicle comprising:
(a) at least one substantially vertical disc rotatably connected to a quasi-horizontal axle, said axle

being operatively attached perpendicular to an arm connected to a frame for attachment to said vehicle;

(b) a sampling unit attached to said disc; and



(c) a sample removing unit attached to said arm in cooperative relationship with said sampling unit.

4,356,735

STARTING MECHANISM FOR INTERNAL COMBUSTION ENGINES

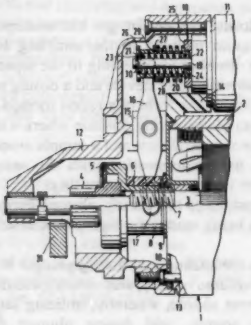
Karl-Heinz Bögner, Neuhausen, and Martin Mayer, Sersheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,517

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1980, 3008623

Int. Cl.³ F02N *15/06*

U.S. Cl. 74—7 A 4 Claims



1. A starting mechanism for an internal combustion engine having

a starter motor (1) having a drive shaft (3);

a starter pinion (4) having gear teeth slidably located on the drive shaft, the gear teeth being adapted for engagement with the teeth of a meshing gear coupled to the internal combustion engine;

a force transmitting mechanism (5-8) including a coupling sleeve (8) and an overrunning gear (5) located on the drive shaft and slidably coupled to the starter pinion;

a pivotably located engagement lever (16) having one fork-shaped end pivotably attached to the force transmitting sleeve (8) for sliding the force transmitting mechanism, and hence the starter pinion on the drive shaft;

a solenoid-switch combination unit (11) having a reciprocable elongated armature (18) and an operating rod (19) forming part thereof;

a bushing (20) surrounding the operating rod;

a first spring (21) interposed between the bushing and the operating rod to couple the operating rod and the bushing;

a carrier ring (27) slidable on the bushing,

the other end of the engagement lever being operatively coupled between said carrier ring (27) and the end (26) of the bushing (20) remote from the armature (14);

and a pre-compressed spring (28) located between the carrier ring and the end face of the armature for urging the carrier ring away from the face of the armature and to entrain the other end of the engagement lever (16) between the carrier ring and the end of the bushing, while exerting a force against the end face of the armature, to assist the magnetic pull-in force of the solenoid if the lever cannot follow the operating rod in case the pinion (4) and the gear (31) on the internal combustion engine are in tooth-to-tooth position.

4,356,736

IMBALANCE-OSCILLATION EXCITER

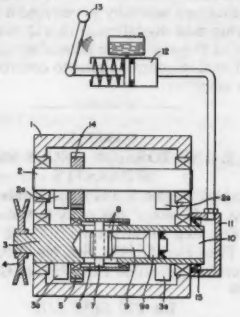
Franz Riedl, Munich, Fed. Rep. of Germany, assignor to Wacker-Werke GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,755

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1979, 2909204

Int. Cl.³ F16H *33/00*

U.S. Cl. 74—61 1 Claim



1. An oscillation exciter, which comprises in combination:

a housing;

two at least axially parallel imbalance-weight carriers rotatably journalled in said housing and rotatably positively coupled with one another, each of said carriers being provided with two imbalance weights, and at least one of said carriers comprising a shaft;

a hub on one of said shafts for effecting coupling of said carriers for continuous counter rotation for changing the phase position of said imbalance weights, said hub being rotatably arranged on said shaft yet being fixed axially, said hub being provided, in that wall thereof which surrounds said shaft, with a hub groove which extends along said shaft, said shaft being provided with a shaft slot extending along said shaft at an incline to said hub groove;

a pin passing substantially at right angles through, and fixed against rotation with respect to, said shaft, said pin slidably engaging said hub groove and shiftable in said shaft slot;

an adjustment member arranged coaxially in said shaft for effecting shifting of said pin, said shaft having an axially parallel cylinder chamber open towards one end face of said shaft, said adjustment member having a piston extension facing the open side of said cylinder chamber and sealed off relative thereto, said adjustment member and said piston extension being slidable in said cylinder chamber; and

a pressure-medium chamber fixed to said housing and sealed

off relative to as well as surrounding the cylinder chamber end of said shaft, said pressure-medium chamber serving for supplying pressure medium from said open side of said cylinder chamber to said piston extension for moving said piston extension in a first direction, movement of said piston extension in the opposite direction being effected by mechanical back or reaction pressure generated as a result of the angle and direction of inclination of said hub groove relative to said shaft slot and the direction of rotation of said shaft.

4,356,737

DEVICE FOR THE ROTATING ACTUATION OF LINEARLY ACTUATED CONTROL ELEMENTS

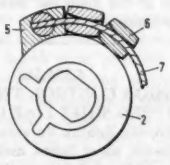
Karl Burghoff, Oberursel; Ottmar Supper, Sindelfingen, and Hans Trube, Herrenberg, all of Fed. Rep. of Germany, assignors to Max Kammerer GmbH, Oberursel and Daimler-Benz Aktiengesellschaft, Stuttgart, both of, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,485

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1979, 2905568

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501 R 7 Claims



1. An actuation device for use with a linearly actuated control element, for example, a switching, regulating or steering element comprising:

(a) a take-up body;

(b) a housing enclosing said take-up body;

(c) a shaft connected for rotating said take-up body, said shaft extending outwardly of said housing;

(d) a flexible tension and compression element secured at one end thereof to said take-up body whereby said tension and compression element may be wound onto said take-up body or wound off of said take-up body, said tension and compression element comprising:

(i) a flexible guide strand, and

(ii) a plurality of elongated rounded pressure bodies, each pressure body having a longitudinal bore therethrough, each said longitudinal bore having a diameter which constantly increases smoothly from its longitudinal center to the ends of the bore for presenting a smoothly curved contact surface to said strand such that said strand contacts said bore along the entire length thereof when said tension and compression element is wound onto said take-up body, said pressure bodies being threaded onto said flexible guide strand and positioned closely adjacent one another to form a tight packing, and

(e) a tube member, extending outwardly of said housing, said tube member enclosing at least a part of said tension and compression element during operation of said device, the other end of said tension and compression element adopted for operation of said linearly actuated control element in response to rotation of said shaft.

4,356,738

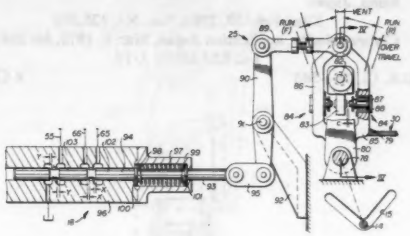
CONTROL ARRANGEMENT WITH SNUBBER MEANS

Lucien B. Shuler, Bettendorf, Iowa, and William J. Spivey, Jr., Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 89,321, Jun. 13, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,407

Int. Cl.³ G05G *1/04, 9/08*

U.S. Cl. 74—470 3 Claims



1. A control arrangement comprising

a pivotal control member (79) having a pair of arms (85,86),

a pivotal lever (80) disposed between said arms (85,86),

a stop member (83) secured on said lever (80), and

snubber means (84) for resiliently engaging said stop member (83) upon relative pivoting of said control member (79) and said lever (80), said snubber means (84) including a pin (87) reciprocally mounted on said control member (79) and biasing means (88) for biasing said pin (87) towards said stop member (83).

4,356,739

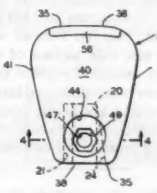
CONTROL ROD HANDLE

Warner K. Brown, and Robert L. Kirby, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 1, 1980, Ser. No. 136,198

Int. Cl.³ G05G *1/02;* E05B *3/04*

U.S. Cl. 74—548 11 Claims



1. A handle comprising:

a body portion having two ends;

a longitudinal passageway extending into one end of the body portion and adapted to receive an extremity of a rod;

the rod having a transverse opening near the extremity;

a transverse passageway in the body portion arranged to align with the transverse opening when the handle is mounted on the rod;

the transverse passageway having a portion with a configuration which holds a nut from turning when engaged with the threaded end of a bolt which extends through the transverse opening in the rod and is threaded into the nut held by the portion to facilitate securing the handle to the end; and

the longitudinal passageway being provided with generally rectangular portions and generally circular portions for

receiving the extremity of the rod having either a generally rectangular or generally cylindrical configuration.

4,356,740

TILTABLE PEDAL APPARATUS

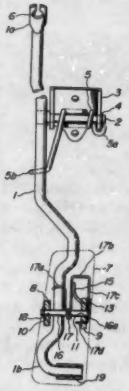
Kenji Kubo, Yokohama, and Makoto Moriya, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 29, 1980, Ser. No. 125,896

Claims priority, application Japan, Mar. 8, 1979, 54/29474[U]

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—560 **4 Claims**



1. A tiltable pedal apparatus including:

a pedal provided with lugs which are formed with through holes, respectively, at least one lug being formed with a slit which is contiguous with its said through hole;

a lever having a lateral pin which is laterally fitted into said through hole in said at least one lug through said slit such that said pedal is tiltable about said pin;

a tilt spring in the form of a twist coil spring wound about said pin and engaging with said lever and said pedal to urge said pedal in one direction, wherein a portion of said tilt spring extends across said slit and along a side surface of said at least one lug formed with the slit; and means provided on said side surface of said at least one lug for engaging said extended portion of said spring to prevent said pedal from being removed laterally from said pin, said means comprising a stepped portion projecting laterally from said at least one lug to retain said extended portion of said tilt spring from being displaced from said pin.

4,356,741

CAST CRANKSHAFTS

Hans-Joachim Schöpf, Stuttgart, and Dietmar Lug, Weissach i. T., all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

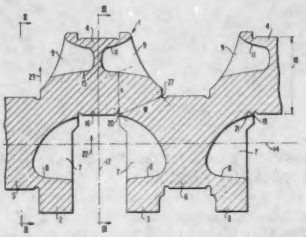
Continuation of Ser. No. 876,320, Feb. 9, 1978, abandoned. This application Feb. 6, 1980, Ser. No. 118,975

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2706072

Int. Cl.³ F16C *3/04*

U.S. Cl. 74—595 **14 Claims**

1. A cast crankshaft at least a pair of crank web means, main pin means provided on respective sides of the crank web means, at least one crank pin means provided between the pair of crank web means and cast-in crank pin recess means provided at the crank pin means, the crank pin recess means being formed by core means inserted prior to casting of the crankshaft, characterized in that the crank pin recess means is delimited by a lower boundary surface extending approximately parallel to a longitudinal center axis of the crankshaft, at least one fillet means is provided at the crank pin means at a distance spaced from the boundary surface of the crank pin recess means, at least one further fillet means is provided at each of the main pin means with one of the further fillet means being disposed adjacent the fillet means provided at the crank pin means but spaced therefrom, a ratio of the smallest distance between the fillet means provided at the crank pin means and



the lower boundary surface of the crank pin recess means to a diameter of the crank pin means lies between about 0.45 and about 0.66, and in that the smallest distance between the fillet means provided at the crank pin means and the boundary surface of the crank pin recess means is approximately equal to the predetermined distance between the adjacent further fillet means provided at the main pin means and the fillet means provided at the crank pin means.

4,356,742

TRANSMISSION CONTROL SYSTEM PROVIDING OVERLAPPED SHIFT LINE COMBINATIONS

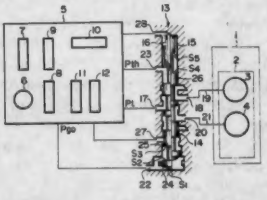
Seitoku Kubo, Toyota; Koujiro Kuramochi, Okazaki, and Tatsuo Kyushima, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 4, 1980, Ser. No. 204,037

Claims priority, application Japan, Apr. 15, 1980, 55-50076

Int. Cl.³ B60K *41/06*

U.S. Cl. 74—869 **3 Claims**



1. For an automatic transmission for a vehicle comprising an engine, comprising a gear transmission mechanism and a plurality of fluid pressure actuated friction engaging mechanisms, selective supply of actuating fluid pressure to said friction engaging mechanisms providing from said gear transmission mechanism a plurality of speed stages including an overdrive speed stage, a directly connected speed stage, and a reduction geared speed stage which is the closest speed stage below the said direct speed stage:

a fluid pressure control system, comprising:

(a) a governor fluid pressure control valve which produces a governor fluid pressure which increases according to increase of vehicle road speed;

(b) a throttle fluid pressure control valve which produces a throttle fluid pressure which increases according to increase of engine load;

(c) a first shift valve, which shifts between a first state and a second state, and which, when it is in said first state,

provides supply of fluid pressure to said friction engaging mechanisms so as to provide said directly connected speed stage from said gear transmission mechanism, and which, when it is in said second state, provides supply of fluid pressure to said friction engaging mechanisms so as to provide said overdrive speed stage from said gear transmission mechanism; shifting of said first shift valve from said first state to said second state, over first ranges of the throttle fluid pressure and the governor fluid pressure, occurring according to a first balance relationship between the throttle fluid pressure and the governor fluid pressure, said first shift valve remaining in said first state while the throttle fluid pressure prevails, and being shifted to said second state when the governor fluid pressure prevails; and shifting of said first shift valve from said second state to said first state, over second ranges of the throttle fluid pressure and the governor fluid pressure, occurring according to a second balance relationship between the throttle fluid pressure and the governor fluid pressure, said first shift valve remaining in said second state while the governor fluid pressure prevails, and being shifted to said first state when the throttle fluid pressure prevails; said second balance relationship being substantially different from said first balance relationship, whereby a considerable hysteresis is present in the operation of said first shift valve; and

(d) a second shift valve, which shifts between a third state and a fourth state, and which, when it is in said third state, provides supply of fluid pressure to said friction engaging mechanisms so as to provide said reduction geared speed stage from said gear transmission mechanism, and which, when it is in said fourth state, provides supply of fluid pressure to said friction engaging mechanisms so as to provide said directly connected speed stage from said gear transmission mechanism; shifting of said second shift valve from said third state to said fourth state, over third ranges of the throttle fluid pressure and the governor fluid pressure, occurring according to a third balance relationship between the throttle fluid pressure and the governor fluid pressure, said second shift valve remaining in said third state while the throttle fluid pressure prevails, and being shifted to said fourth state when the governor fluid pressure prevails; and shifting of said second shift valve from said fourth state to said third state, over fourth ranges of the throttle fluid pressure and the governor fluid pressure, occurring according to a fourth balance relationship between the throttle fluid pressure and the governor fluid pressure, said second shift valve remaining in said fourth state while the governor fluid pressure prevails, and being shifted to said third state when the throttle fluid pressure prevails; said fourth balance relationship being substantially different from said third balance relationship, whereby a considerable hysteresis is present in the operation of said second shift valve;

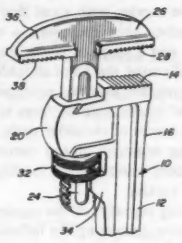
(e) in a shift diagram showing said first, second, third, and fourth balance relationships as lines on a chart of engine load against vehicle speed, the portion of the line corresponding to said second balance relationship, over said second ranges of the throttle fluid pressure and the governor fluid pressure, lying generally to the high engine load low vehicle speed side of the portion of the line corresponding to said third balance relationship, over said third ranges of the throttle fluid pressure and the governor fluid pressure; whereby, during the operation of said vehicle, said automatic transmission changes between the directly connected speed stage and the overdrive speed stage relatively infrequently, thus providing a long operating life for said friction engaging mechanisms and for said transmission as a whole.

4,356,743

PIPE WRENCH WITH JAW HEEL END EXTENSION

Ben E. Muschalek, Jr., P.O. Box 198, McCamey, Tex. 79752

Filed Sep. 9, 1980, Ser. No. 185,621
Int. Cl.³ B25B *13/58*
U.S. Cl. 81—180 R **7 Claims**



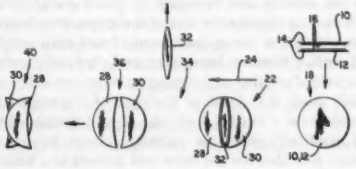
1. In a conventional, self tightening pipe wrench of the type including an elongated handle defining an endwise outwardly facing first jaw element on one end, a longitudinally extending sleeve portion on said one end, an L-shaped jaw including a long leg slidably received through said sleeve portion for longitudinal shifting along said handle and a short leg disposed at generally right angles to said long leg and defining a second jaw element disposed outwardly of and opposing the first jaw element for movement toward and away from the latter responsive to movement of said long leg toward and away from the other end of said handle, jaw shifting means operatively connected between said handle and long leg for adjustably shifting the latter along said handle and wherein angular displacement of said handle about an object engaged between said jaws, when the free end of said handle is swung in the direction in which said jaws open, causes said jaws to tighten their grip on said object; the improvement comprising a projection on said L-shaped jaw adjacent the juncture between said short and long legs and projecting outwardly from the side of said long leg remote from the side thereof outwardly from which said short leg projects, said projection extending outwardly from said long leg a sufficient distance to abut a planar surface facing in the direction in which said short leg projects, spaced outwardly of said long leg, sleeve portion and jaw shifting means and with which the other end of said handle is also abutted.

4,356,744

SHOULDER PAD FORMER

C. Ray Hamilton; William O. Mitchell, and Gordon H. Ellington, all of Vidalia, Ga., assignors to Oxford Industries, Inc., Vidalia, Ga.

Filed Jun. 19, 1980, Ser. No. 160,853
Int. Cl.³ B26D *1/38*
U.S. Cl. 83—24 **9 Claims**



1. A method of forming garment shoulder pads and the like comprising the steps of:

placing plies of shoulder pad material in overlying stacked

relationship in the leading and following segments of a carrier,

moving the carrier along a processing path through a series of processing stations with the leading segment of the carrier preceding the following segment,

when the carrier reaches a first processing station, cutting through the stack of shoulder pad material between the segments of the carrier with a cut that forms the stack in a stack of leading shoulder pads, a stack of following shoulder pads and a stack of waste material between the leading and following stacks of shoulder pads,

when the carrier reaches a second processing station, removing the stack of waste material from between the leading and following stacks of shoulder pads,

when the leading segment of the carrier reaches a third processing station, removing the leading stack of shoulder pads from the carrier,

when the following segment of the carrier reaches the third processing station, removing the following stack of shoulder pads from the carrier,

and placing the leading and following stacks of pads in sequence as they are removed from the carrier in a vertical stack.

4,356,745

SYNCHRONOUS ROTARY CROSS CUTTER

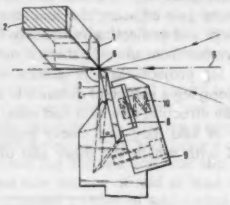
Hans Hornung, Alsbach, and Wolfgang Schneider, Pfungstadt, both of Fed. Rep. of Germany, assignors to Dr. Otto C. Strecker KG, Pfungstadt and Bruderhaus Maschinen GmbH, Reutlingen, both of, Fed. Rep. of Germany

Filed Oct. 30, 1980, Ser. No. 202,056

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1979, 2945669

Int. Cl.³ B26D *1/62*

U.S. Cl. 83—341 **6 Claims**



6. A synchronous rotary cross cutter for cutting a material web of paper and the like travelling in a predetermined path, the cutter comprising two drums arranged at opposite sides of the path of the material web and synchronously rotatable about parallel axes, each of said drums having a peripheral surface; and at least two cutting elements each arranged on said peripheral surface of a respective one of said drums so as to extend in an axial direction of the latter and having cutting edges engaging one another and arranged so that a radial distance from each cutting edge to the axis of the respective drum decreases from one end to the opposite end of said cutting edge, one of said cutting elements being arranged elastically yieldably with a two-sided overlap and producing at its one side a pulling cut which starts in a plane of the path of the material web and extends over a cutting line, one of said drums which carries said elastically yieldable cutting element having a bearing surface provided for the latter and formed as a helical surface, said helical surface having an axis which lies on the cutting edge of said elastically yieldable cutting element, said helical surface having such an inclination that free angles of said elastically elastically yieldable cutting element at the beginning and at the end of said cutting line are equal to one another.

4,356,746

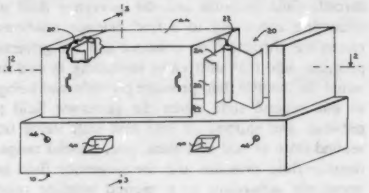
APPARATUS FOR PORTIONING MEAT

John A. Whitehouse, Norwich, England, assignor to AEW Engineering Co., Ltd., Norwich, England

Filed Jun. 30, 1980, Ser. No. 164,762

Int. Cl.³ B26D *7/06, 7/22*

U.S. Cl. 83—411 A **5 Claims**



1. Apparatus for portioning meat, comprising in combination

a bandsaw arranged with a horizontal cutting flight,

first and second meat holders positioned above said flight for rotation about a vertical axis, each meat holder being adapted to hold meat to be portioned substantially vertically at a position spaced from said axis,

a respective drive means for rotating each meat holder about said axis,

a respective depth stop associated with each meat holder below said flight whereby the meat to be portioned is fed across said flight while resting on the depth stop by rotation of the meat holder, and

a cover selectively positionable so as to cover one of said meat holders at a time, said cover comprising

(1) a slidable inverted channel section member positionable so as to cover one of the said meat holders at a time,

(2) first end plate means at one end of the apparatus which cooperates with the selectively positionable channel section member when the latter is at one end of its travel to form therewith a protective cover for the meat holder adjacent the said first end plate means, and

(3) second end plate means located at the opposite end of the apparatus which co-operate with the selectively positionable channel section member to form a protective cover for the other meat holder at the opposite end of the apparatus when the channel section member has been moved to that end of the apparatus.

4,356,747

DEVICE FOR SIMULTANEOUSLY CUTTING A PLURALITY OF WRAPPERS FROM A TOBACCO LEAF

Ian Kjaer, Hadsund, and Hans J. Moller, Harlev, both of Denmark, assignors to Skandinavisk Tobakskompagni A/S, Soborg, Denmark

Filed Mar. 23, 1981, Ser. No. 246,860

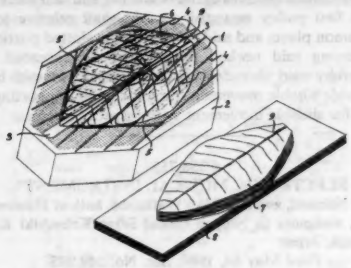
Claims priority, application Denmark, Mar. 27, 1980, 1323/80

Int. Cl.³ A24C *1/00*

U.S. Cl. 83—451 **1 Claim**

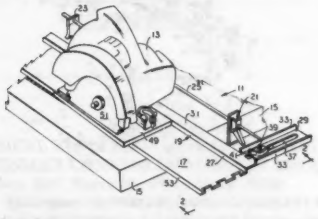
1. A device for simultaneously cutting a plurality of wrappers or binders or blanks therefor from a tobacco leaf and comprising a cutting table with an indication made visible by illumination from below to facilitate the optimum positioning of the tobacco leaf in relation to the cutting pattern, and on which the tobacco leaf is held by suction through perforations provided in the table, wherein the table comprises light-translucent portions forming, firstly, a central, elongated field having the contour of a slender hourglass and, secondly, two

systems of straight lines on opposite sides of said field, the lines of each system being parallel and having a spacing similar to



the width of the blanks to be cut out and a direction forming a small angle with the centre line in the central field.

4,356,748
SAW GUIDE
Charles W. Tilton, 2655 Middlefield Rd., Redwood City, Calif. 94063
Filed Oct. 2, 1980, Ser. No. 193,367
Int. Cl.³ B27B *9/04*
U.S. Cl. 83—745 **7 Claims**



1. An adjustable saw guide tool for hand-held power saws, comprising

saw table slide member means having an upper surface for supporting the base plate of the power saw as the power saw base plate slides along the upper surface of the saw table slide member means in the course of making a cut on the workpiece,

said saw table slide member means having

a flat lower surface engagable directly with and supported on the upper surface of the workpiece and

a side surface having a lower cut indicating edge engagable directly with the upper surface of the workpiece for indicating the line to be cut without any lateral offset of the kind which could arise if the cut indicating edge were spaced from the surface of the workpiece,

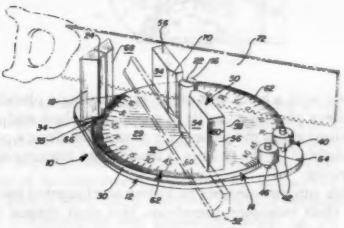
said guide member means having a guide edge for engaging a related side edge of the base plate of the power saw to guide the power saw as the base plate slides along the upper surface of the saw table slide member means in the course of making a cut on the workpiece,

locking means for locking the saw guide member means to the saw table slide member means,

said locking means including lateral adjustment means for permitting the lateral position of the guide edge to be adjusted with respect to the cut indicating edge prior to locking the saw guide member means to the saw table slide member means for accommodating different types of power saws having different widths of base plates in a way such that the guide edge acting on the saw base plate positions the saw blade substantially immediately adjacent the cut indicating edge, and

clamping means for clamping the saw guide tool to the work piece by engaging the edges of the workpiece.

4,356,749
MITER BOX
Kieran O. Spencer, 7356 Pottawatomi Dr., Palos Heights, Ill. 60463
Filed Jun. 25, 1980, Ser. No. 162,903
Int. Cl.³ B27G *5/02*
U.S. Cl. 83—765 **10 Claims**



1. A miter box, comprising:

(a) a lower platform;

(h) first and second radially spaced upstanding saw guide posts fixed to said lower platform with the region between said first and second guide posts being unobstructed above said lower platform, each said post having a vertical, upwardly open slot extending therethrough, said slots being in radial alignment, at least a portion of said first post adajcent said lower platform being of circular cross-section, said second post having a circumferentially extending groove formed therein, said groove comprising a generally L-shaped notch in said second post adjacent said lower platform and cooperating with said lower platform to form said groove, said groove facing said first saw guide post and capturing the circular edge portion of said upper platform for relative sliding movement of said edge portion relative to said second saw guide post;

(c) an upper platform overlying and coupled for relative rotation to said lower platform, said lower platform having at least a portion extending from beneath said upper platform, said second saw guide post secured to and extending upwardly from said extending portion, said upper platform having a flat upper surface and an outer circumferential edge, said outer edge defining at least a portion of a circle, said upper platform having a hole disposed at the center of curvature of said circle and receiving the circular portion of said first post for relative rotation of said first post and said upper platform, one of said lower and upper platforms being adapted to be fixed whereby said platforms are rotatable relative to each other;

(d) upright workpiece supporting means secured to said upper platform surface and extending radially outwardly from said hole, said workpiece supporting means having at least one flat vertical face, the plane of which resides between said first and second posts;

(e) a reference mark on said lower platform aligned with said slots;

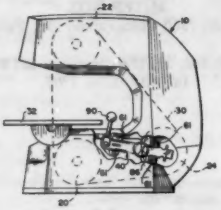
(f) an angular scale on said upper platform surface adjacent said circular outer edge portion and alignable with said reference mark; and,

(g) means for selectively preventing relative roation between said lower and upper platforms.

4,356,750
BAND SAW TENSION AND TRACKING ASSEMBLY

John G. Legler, and Robert L. Bartlett, both of Columbia, Mo., assignors to Benchmark Tool Company, Jefferson City, Mo.

Filed Nov. 29, 1979, Ser. No. 98,554
Int. Cl.³ B26D 1/48
U.S. Cl. 83—816 12 Claims



1. For use with a band saw of the type having a plurality of spaced pulleys positioned to lie in a common plane and a saw band entrained about the pulleys for movement along a path in the plane defined by the pulleys, a tension and tracking assembly comprising:

a movable support member including an elongated bar having a shaft extending therefrom, said shaft shaped to receive a pulley for rotation with respect thereto;

bracket means including a top wall, an end wall defining a slot for reception of said bar to provide sliding engagement of said bar with respect to said end wall, and at least two side walls, said side walls having elongated tracks defined therein;

sliding means including an overcenter toggle arrangement extending from said bracket means to said bar, operable between first and second positions to displace said movable support member in first and second directions to relax and tension, respectively, a saw band, bias means coupling said bar to said overcenter toggle arrangement, said bias means urging said bar such that a pulley mounted on said shaft is urged into engagement with a saw band in response to said overcenter toggle arrangement being operated to said first position, and track follower means which engage said tracks of said bracket side walls to provide alignment of said bar as it is displaced relative to said bracket.

8. In combination with a band saw of the type having a continuous saw band and a plurality of spaced pulleys positioned to lie in a common plane, said saw band entrained about said pulleys for movement along a path in said plane defined by said pulleys, an improved tension and tracking assembly comprising:

a movable support member including an elongated bar having a shaft extending therefrom, said shaft shaped to receive a first pulley for rotation with respect thereto;

bracket means including a top wall and an end wall defining a slot for reception of said bar to provide sliding engagement of said bar with respect to said end wall;

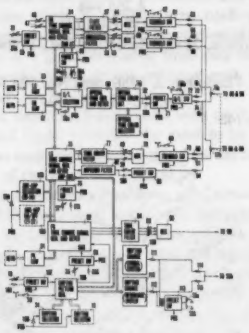
sliding means including an overcenter toggle arrangement extending from said bracket means to said bar, operable between first and second positions to displace said movable support member and said first pulley and first and second directions to relax and tension, respectively, said saw band extending about said plurality of spaced pulleys, bias means coupling said bar to said overcenter toggle arrangement, said bias means urging said bar such that said first pulley is urged into engagement with said saw band in response to said overcenter toggle arrangement being operated to said first position, thereby tensioning said saw band;

tilting means including an elongated coupling member extending between said bar and said bracket for providing tilting support therefor, and having a threaded shaft including a threaded portion and a necked portion, said top wall including means for receiving said coupling member such that advancement of said coupling member in first and second directions deflects said bar and said shaft to tilt said first pulley mounted on said shaft relative to said common plane, and said bar defining a slotted portion for receiving said necked portion of said threaded shaft whereby said threaded shaft is coupled to said bar to provide tiltable movement therefor while supporting said bar for slidable movement with respect thereto.

4,356,751
ELECTRONIC MUSICAL INSTRUMENT

Naoyuki Niinomi, and Kunihiko Watanabe, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Filed May 14, 1980, Ser. No. 149,885
Claims priority, application Japan, May 19, 1979, 54-61872
Int. Cl.³ G10F 1/00
U.S. Cl. 84—1.03 4 Claims



1. An electronic musical instrument comprising:

a power source for supplying power to said instrument;

means for controlling manners of tone production; and

means coupled to said control means for forming a muical tone corresponding to a depressed key;

said control means including:

a plurality of manually operated members for manually setting parameters that determine said manners and mounted on a control panel;

means for presetting one or more of said parameters;

means for automatically coupling, at the time said power source is turned on, said preset parameters to said musical tone forming means irrespective of said manually operated members and;

means for substituting said manually set parameters for said preset parameters to be coupled to said musical tone forming means at a time after said turn-on time of said power source.

4,356,752
AUTOMATIC ACCOMPANIMENT SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENT

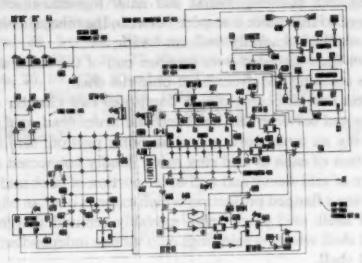
Hideo Suzuki, Shizuoka, and Makoto Kaneko, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 27, 1981, Ser. No. 228,783
Claims priority, application Japan, Jan. 28, 1980, 55/8607; May 31, 1980, 55/73638
Int. Cl.³ G10H 1/36
U.S. Cl. 84—1.03 14 Claims

1. An accompaniment system for an electronic musical instrument comprising:

pulse generating means for assigning a time division timing corresponding to each note and outputting a pulse at the timing corresponding to each predetermined note;

pattern generating means for generating a pattern signal representing tones to be produced;



key data extracting means for extracting a pulse sent out from said pulse generating means on the basis of said pattern signal; and

musical tone production means for producing the musical tone of a note corresponding to the generation timing of the pulse extracted by said key data extracting means.

4,356,753

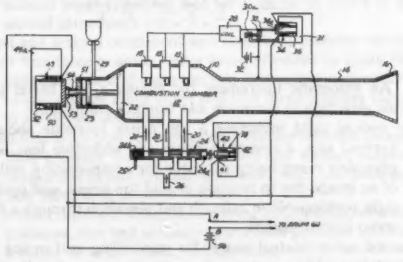
MUSICAL ELECTRO MAGNETIC ANALOG SYNTHESIZER CONTROLLED ROCKET ENGINE

Paul L. Galley, 2001 Pierce St., Flint, Mich. 48503

Filed Jan. 29, 1981, Ser. No. 229,461

Int. Cl.³ G10D *13/02*; G10H *3/02*

U.S. Cl. 84—1.04 **11 Claims**



1. A rocket engine type musical instrument, comprising:

a firing chamber of preselected pitch determining length and diameter;

a plurality of igniting means mounted in said chamber;

a fuel source operably connected to provide fuel into said chamber proximate said igniting means;

means for injecting oxygen into said chamber and mixing it with the fuel for ignition;

a barrel and port connected to said chamber to provide a sound output of predetermined pitch from said chamber; and

means for operating said igniting means, said fuel source and said injecting means at a selectively predetermined frequency for providing a controllable and continuously variable frequency explosive sound output from said port.

4,356,754

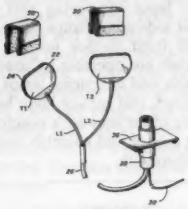
MUSICAL INSTRUMENT TRANSDUCER

Lawrence R. Fishman, 76 Grove St., West Medford, Mass. 02155

Filed Oct. 20, 1980, Ser. No. 198,939

Int. Cl.³ G10H *3/00*

U.S. Cl. 84—1.16 **16 Claims**



1. For a stringed musical instrument having a bridge or the like adapted to support and space the strings, said bridge having oppositely directed, substantially parallel, front and rear bridge faces extending substantially transverse to the longitudinal axis of the instrument, apparatus for sensing the vibrations of the strings comprising vibration sensitive transducer means, means for mounting said transducer means on the bridge in intimate contact with at least one of the front and rear faces of the bridge and in close proximity to the strings, electrical lead means coupling from said transducer means, and an electrical connector coupling to said lead, and wherein said bridge has a top edge and said mounting means for said transducer means comprises a mounting member adapted to extend over the top edge of the bridge for holding said transducer means against the face of the bridge.

4,356,755

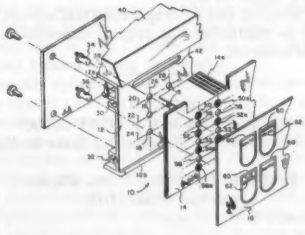
ORGAN STOP CONTROL PANEL

Lanny C. Davis, Buffalo Grove, and Roy A. Anderson, Palatine, both of Ill., assignors to CBS Inc., New York, N.Y.

Filed Jan. 11, 1980, Ser. No. 111,405

Int. Cl.³ G09B *15/02*; G10B *3/10*

U.S. Cl. 84—343 **19 Claims**



1. A control panel for mounting on the console of an organ having a plurality of latching circuits associated respectively with individual organ stops and adapted to energize circuitry for affecting the tonal quality of the organ in accordance with the latching circuit state, said control panel comprising:

a flat, elongated support panel having a multiplicity of apertures therethrough arranged in at least first and second vertically spaced horizontal rows and a plurality of horizontally spaced vertical columns,

a plurality of touch-sensitive switches supported on said support panel, at least some of which are arranged in pairs connected for setting and re-setting, respectively, a corresponding latching circuit, the switches of each pair being

disposed proximate and respectively below and above an aperture in said support panel,

indicating lamps responsive to respective conditions of each of said latching circuits for indicating the state of each latching circuit and corresponding organ stop, an indicating lamp responsive to a given latching circuit being disposed in an aperture in said support panel disposed between the pair of touch-sensitive switches employed for operating the given latching circuit, and

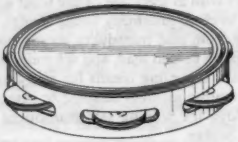
a common surface layer overlaying said touch-sensitive switches and said indicating lamps providing a substantially flat overall front surface for the panel through which said switches are operable by touch of said layer and through which said indicating lamps are observable only when energized, said surface layer having displayed thereon a plurality of outlines each positioned to circumscribe a different pair of said switches and the indicating lamp associated therewith.

4,356,756

METHOD OF FORMING A NON-TUNABLE HEAD

Donald R. Hartry, La Canada, Calif., assignor to Remo, Inc., North Hollywood, Calif.

Filed Apr. 3, 1981, Ser. No. 250,910
Int. Cl.³ G10D *13/02*; B29C *25/00*
U.S. Cl. 84—418 14 Claims



1. A method of forming a non-tunable head for a drum, tambourine, banjo or similar musical instrument comprising:

swelling a highly oriented crystalline polymeric film by immersing said film into a liquid solvent bath until said film becomes sufficiently soft so that it can be draped, said solvent being a halogenated methane compound;

removing said film from said bath;

attaching said film to a member having an opening therein before said film dries and

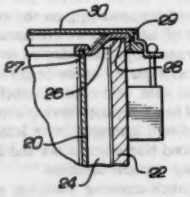
drying said attached film by evaporating said solvent, said film shrinking to substantially its original dimensions such that the film is tensioned.

4,356,757

MUSICAL DRUM CONSTRUCTION

Michael G. Mooy, 130 W. Figueroa St., Santa Barbara, Calif. 93101

Filed May 19, 1980, Ser. No. 150,884
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—411 R 5 Claims



1. A musical drum comprising:

a cylindrical shell;

a cylindrical inner sleeve, wherein said inner sleeve is of slightly less diameter and height than said shell, the sleeve being of a material and construction to resonate when the drum head is stuck;

flexible means for disposing the sleeve coaxially within the shell and allowing radial and axial movement of said sleeve so that there is a space between the inner sleeve and the shell of generally uniform width;

a drum head disposed over an open end of the shell; and

means securing the drum head onto the shell;

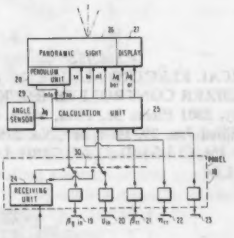
wherein said disposing means comprises two circular rings disposed between said shell and said drum head, said rings having an inner portion and an outer portion, said inner portion of each of said ring being fixedly connected to an edge of said sleeve and said outer portion of each said ring having a flanged projection which extends over an edge of said shell, said rings being movably secured thereby to said shell whereby said rings may vibrate independently of said shell.

4,356,758

AIMING INSTRUMENT

Torbern Teiling, Lidingö, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Jun. 9, 1980, Ser. No. 158,028
Claims priority, application Sweden, Jun. 14, 1979, 7905245
Int. Cl.³ F41G *3/06*
U.S. Cl. 89—41 E 5 Claims



1. An automatic instrument for aiming a gun barrel in a specific direction in elevation and azimuth comprising:

an optical sight including a top prism rotatable about a vertical axis, a reversion prism and objective lens, said reversion prism being rotatable for compensating rolling of an image due to rotation of said top prism; said optical sight positionable in azimuth and elevation through a first servo control means;

second servo control means for controlling said optics for rotating said reversion prism whereby ground inclination is compensated;

a pendulum unit for providing signal proportional to the inclination of the line of sight and pitch angle of said line of sight;

an angle sensor for providing a signal indicating the elevation of said gun barrel;

calculating unit connected to receive said signals;

means for applying an azimmuthal reference and pitch angle to said calculating unit; and

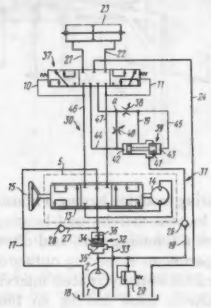
means connected to said calculating unit for providing azimuth and elevation angles to said optical sight for controlling the position of said sight, and for supplying signals to said servo control means whereby ground inclination is compensated.

4,356,759

HYDRAULIC CONTROL SYSTEM OF A TRANSPORT VEHICLE

Boris A. Ljubimov, Verkhnyaya ulitsa, 18, kv. 30, Moscow; Evgeny N. Chervyakov, Mozhaiskoe shosse, 38, kv. 36, Odintsovo Moskovskoi oblasti; Jury I. Sudakov, ulitsa akademika Komarova, 10, kv. 45, Moscow; Valery Y. Obidin, Novoryazanskaya ulitsa, 2/7, kv. 75, Moscow; Iraida S. Pogorelova, Uralskaya ulitsa, 5, kv. 138, Moscow; Grigory E. Ogy, ulitsa Mira, 20, kv. 30, Kharkov; Leonid A. Vainshtein, ulitsa Bairona, 161"r", kv. 27, Kharkov, and Lazar A. Pann, ulitsa Mira, 20, kv. 150, Kharkov, all of U.S.S.R.

Filed Mar. 14, 1978, Ser. No. 886,772
Int. Cl.³ B62D *5/08;* F15B *13/042*
U.S. Cl. 91—31 **10 Claims**



1. A hydraulic control system for hydraulically actuating a servomotor in first and second directions in proportion to a manual input, comprising:

a source of pressurized fluid; double-acting servomotor;

a manual input controlled first three-position valve having an input for said pressurized fluid and a fluid return line;

said first three-position valve having a first position which it assumes in the absence of a manual input, a second position which it assumes in the absence of a manual input requiring said servomotor to move in said first direction and a third position which it assumes in the presence of a manual input requiring said servomotor to move in said second direction;

first and second outputs of said first three-position valve;

said first three-position valve being effective to apply fluid pressure from said source to said first output in proportion to said manual input when said first three-position valve is in its second position;

said first three-position valve being further effective to apply fluid pressure from said source to said second output in proportion to said manual input when said first three-position valve is in its third position;

a second three-position valve having first, second and third positions, first and second control fluid pressure inlets and a single actuation fluid pressure inlet;

said first and second outputs being connected to said first and second control fluid pressure inlets, respectively;

said second three-position valve including means for assuming its first position in the absence of fluid pressure in either of its first and second control fluid pressure inlets, means for assuming its second position in the presence of fluid pressure in its first control fluid pressure inlet, and means for assuming its third position in the presence of fluid pressure in its second control fluid pressure inlet;

said second three-position valve having first and second actuating fluid outlets connected to corresponding inlets of said servomotor;

a control fluid throttling member having a first throat area;

an actuating fluid throttling member having a second throat area;

an inlet of said actuating fluid throttling member being connected to said source;

outlets of said control fluid throttling member and said actuating fluid throttling member being combined and applied to said actuation fluid pressure inlet of said second three-position valve;

pressure responsive means for selecting the higher pressure acting in one of said first and second inlets from said first and second outputs, respectively, and applying said higher pressure to said control fluid throttling member;

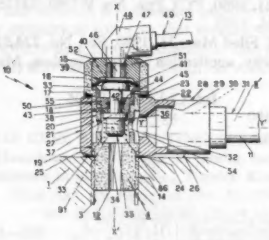
said second three-position valve being effective to block the combined control and actuating fluid from said first and second actuating fluid outlets when in its first position, to apply said combined control and actuating fluid to said first actuating fluid outlet when in its second position and to apply said combined control and actuating fluid to said second actuating fluid outlet when in its third position whereby said servomotor is enabled to remain motionless, move in said first direction and move in said second direction, respectively.

4,356,760

RAM LOCKING DEVICE

Daniel Bouteille, Ville D'Avray, France, assignor to La Telemecanique Electrique, France

Filed Apr. 21, 1980, Ser. No. 142,184
Claims priority, application France, Apr. 27, 1979, 79 10796
Int. Cl.³ F15B *13/042*
U.S. Cl. 91—445 **1 Claim**



1. In combination: a ram cylinder; a source of high pressure fluid; an inlet and exhaust distributor; a source of control pressure fluid; a coupling and locking device having a supply inlet connected to the source of control pressure fluid and an outlet, said ram cylinder having a cylinder side surface portion and a threaded opening in said cylinder side surface portion, said coupling and locking device comprising:

(i) a generally cylindrical body having a threaded end, and, at the opposite end thereof, a tightening head adapted for controlling the screwing engagement of the said threaded end into the said threaded opening, said cylindrical body further having, located between the threaded end and the tightening head, an intermediate body portion having an inner axial channel terminating into an outlet aperture at said threaded end and forming the said outlet, and a transverse channel opening into a lateral opening in the outer surface of the said intermediate body portion, said tightening head having an inner housing having first and second housing portions;

(ii) a fluid control member mounted movable within said inner housing and sealingly separating the said first and second housing portions from each other;

(iii) orientatable coupling means mounted on said tightening head and having a first end portion which forms said control inlet and a second end portion which opens into said first housing portion;

(iv) valve means mounted movable within said inner axial channel and coupled to said fluid control member for actuation by said fluid control member, said valve means

having a first position in which the fluid communication between the said lateral opening and the said outlet aperture is established and a second position in which the said communication is closed;

(v) spring means, cooperating with the said valve means to move the said valve means into a direction opposite to direction of motion of said valve means under actuation by said fluid control member;

(vi) a pivoting coupling means having a collar-shaped body portion and a generally tubular transverse extension, said collar-shaped body portion having first and second transverse parallel faces and an inner axial bore which receives and encloses the said intermediate body portion of said generally cylindrical body, said generally tubular extension having a passage therein which forms the said supply inlet and opens into said inner axial bore, said first transverse face of the collar-shaped body portion sealingly engaging the said tightening head and the said second transverse face of the collar-shaped body portion sealingly engaging the said cylinder side surface portion.

4,356,761

FLUID PRESSURE MACHINES

Alan Cameron-Johnson, Bracebridge Heath, and Michael J. Miles, Spilsby, both of England, assignors to Sauer United Kingdom Limited, London, England

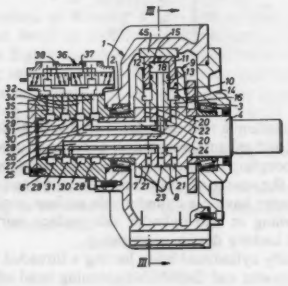
PCT No. PCT/GB80/00058, § 371 Date Nov. 21, 1980, § 102(e) Date Nov. 21, 1980, PCT Pub. No. WO80/02175, PCT Pub. Date Oct. 16, 1980

PCT Filed Mar. 31, 1980, Ser. No. 224,523

Claims priority, application United Kingdom, Mar. 31, 1979, 7911369

Int. Cl.³ F01B *13/06*

U.S. Cl. 91—490 **6 Claims**



1. A fluid pressure machine comprising a number of cylinders (10) arranged radially in a cylinder block (9) which is mounted for orbital non-rotational movement within a housing (1), pistons (11) which are slidable within the cylinders and in sliding contact with abutment faces (44) within the housing, and a rotatable shaft (4) having an eccentric (7) upon which the cylinder block (9) is journalled,

characterised in that

each piston (11) has a cylindrical axial bore (12), open at its radially inner end, in which a fluid displacing member (13), fixed relative to the cylinder block (9), is located, so that the piston (11) defines within the cylinder (10) an annular outer chamber (14) between the cylinder wall and the displacing member (13), and an inner chamber (15) within the piston bore, and in that selectively operable valve means (36) are provided for supplying fluid under pressure to the inner and/or the outer chamber to control the operating speed or torque of the machine.

4,356,762

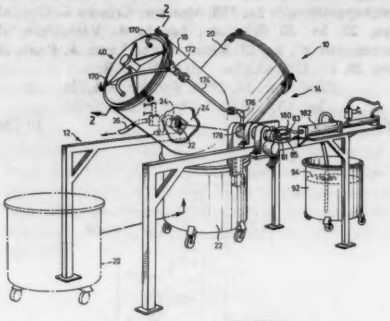
MEAT CURING MACHINE

Christianus P. Langen, Zandkampen 11, Cuijk, Netherlands

Continuation of Ser. No. 36,352, May 7, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 258,139

Int. Cl.³ B02B *3/12, 23/00*

U.S. Cl. 99—533 **8 Claims**



1. In a meat curing machine having a housing formed with a curing chamber located therein, said housing being mounted for rotation about a tumbling axis, said chamber having first and second compartments extending outwardly from the tumbling axis at circumferentially spaced intervals, said first and second compartments each having an inner end opening towards said tumbling axis and an outer end remote from said tumbling axis, means for drawing a vacuum in said curing chamber and means for rotating said housing about said tumbling axis so as to alternately raise and lower said first and second compartments relative to one another such that during a portion of the rotation the first compartment is located in a meat receiving position below the second compartment, the improvement comprising;

(a) a plurality of injection needles located at the outer end of the first compartment, each of said injection needles having an injection passage opening therethrough and each injection passage having an input end and a discharge end, the input ends communicating with a manifold located at the outer end of the first compartment with their discharge ends directed toward the inner end of the first compartment,

(b) a source of curing fluid under pressure located externally of said housing,

(c) fluid passage means communicating with the manifold at the input ends of the injection needles and connected to the source of pressurized curing fluid, and

(d) control means in the fluid passage means and operative normally to stop the flow of fluid through said injection passage means but to permit the flow of fluid when said first compartment is in said meat receiving position with respect to said second compartment.

4,356,763

CONTROL ARRANGEMENTS FOR HYDRAULICALLY-OPERATED WOOD PARTICLE OR FIBER BOARD PRESS

Hans A. R. Hagström, Karlstad, Sweden, assignor to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Jun. 24, 1981, Ser. No. 276,871

Claims priority, application Sweden, Jun. 30, 1980, 8004805

Int. Cl.³ B30B *15/16*

U.S. Cl. 100—48 **16 Claims**

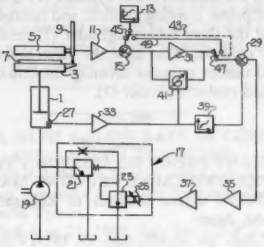
1. A device for use in a hydraulically-operated press having a movable press table and at least one hydraulic cylinder for moving the press table, for controlling both the position and

the speed of travel of the press table during at least part of the pressing cycle, said device comprising

at least one actual-value transmitter that delivers a signal representing the actual position of the press table relative to a reference point,

a set point transmitter that, at each point of time of said part of the pressing cycle, delivers a signal representing a desired position of the press table at the point of time in question,

a first summation point connected to said at least one actual-value transmitter and to said set point transmitter to produce from the two signals a variance signal that represents



the deviation of the actual-value from the set point value, and

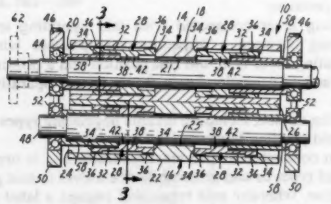
a control valve for the hydraulic cylinder responsive to the variance signal for correcting the deviation, said control valve being a pressure controlling proportional valve, whereby the hydraulic cylinder is acted upon at every point of time during the said part of the pressing cycle by hydraulic medium at the pressure that is required at the point of time in question to keep the press table in a pre-programmed position or to move the press table at a predetermined speed, all in accordance with a substantially arbitrary control curve.

4,356,764

PRESSURE ROLLERS FOR TONER FUSING STATION

Orville C. Haugen, Hennepin, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 4, 1981, Ser. No. 259,949
Int. Cl.³ B30B *3/04, 3/06*
U.S. Cl. 100—169 **15 Claims**



11. A pressure roller assembly comprising a hollow cylindrical roller and means for rotatably supporting said hollow cylindrical roller in pressure contact with a base surface,

said hollow cylindrical roller having a longitudinal axis, an outer coaxial cylindrical surface and a plurality of coaxial inner cylindrical surfaces, said outer cylindrical surface contacting said base surface along a narrow band parallel to said longitudinal axis to define a nip, said means for rotatably supporting said hollow roller comprising:

pressure transfer rollers inside said hollow cylindrical roller for transferring driving torque to rotate said hollow cylindrical roller and for maintaining uniform pressure at said nip, each pressure transfer roller comprising walls defining:

a hollow cylindrical body having a longitudinal axis defining the longitudinal axis of said pressure transfer roller; and

a plurality of axially spaced cylindrical radial projections extending radially out from said cylindrical body for pressure engagement with said inner cylindrical surfaces of said hollow cylindrical roller, said radial projections having cylindrical peripheral surfaces coaxial with said longitudinal axis of said pressure transfer roller and having a diameter less than the diameter of said inner cylindrical surfaces of said hollow cylindrical roller;

support means for engaging and transferring pressure and driving torque to said pressure transfer rollers and for rotatably supporting said pressure transfer rollers inside said hollow cylindrical roller so that said longitudinal axes of said pressure transfer rollers are in parallel alignment with said nip;

loading means for urging said support means toward said nip, said loading means effecting pressure contact between said support means and said pressure transfer rollers and pressure contact between said pressure transfer rollers and said hollow cylindrical rollers thereby effecting desired pressure uniformly along said nip, and

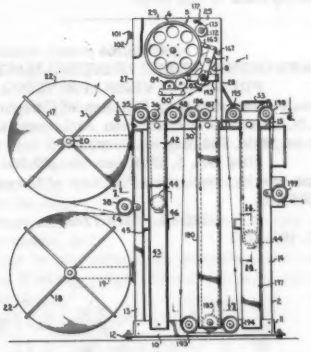
drive means for rotating said support means at a predetermined velocity, wherein said pressure contact together with rotation of said support means effects rolling contact between said support means and said pressure transfer rollers and between said pressure transfer rollers and said hollow cylindrical roller so that rotation of said support means effects simultaneous rotation of said pressure transfer rollers and said hollow cylindrical roller.

4,356,765

STRIP REEL AND PRINTING APPARATUS

J. Daniel Houseman, and Sydney C. Fluke, both of Topeka, Kans., assignors to Brackett, Inc., Topeka, Kans.

Filed Apr. 10, 1981, Ser. No. 253,064
Int. Cl.³ B41F *13/04, 13/50*
U.S. Cl. 101—228 **4 Claims**



1. A printer for strips of headband material comprising:

(a) a frame;

(b) a reel holder connected to said frame for feeding in a strip of headband material;

(c) a driven pulley wheel arrangement pulling said strip along a feed path;

(d) a first take-up tube extending upwardly and having an upward and downward traveling wheel weight therein to take-up slack in said strip;

(e) a printing mechanism located on said frame downstream

of said first take-up tube and including a plate wheel rotatably mounted in said feed path;

(f) a printing mechanism driving means including a motor operably connected to a main drive wheel, said main drive wheel being connected to said plate wheel by a main drive shaft;

(g) rotation angle sensors associated with said main drive wheel including magnetically actuated start and stop switches mounted on said frame adjacent said main drive wheel and extending over a portion thereof and start and stop magnets selectively positionable on said main drive wheel at selected rotation angles and in respective rotational registration with said start and stop switches;

(h) ink applicator wheels and an ink tray mounted on said frame to apply ink to said plate wheel;

(i) a swing mounted bracket mounted adjacent said plate wheel and carrying a rotatably mounted pinch wheel in contact with an impression wheel in the feed path of said strip, said bracket being selectively swingeable toward and away from said plate wheel to move said impression wheel and said strip in and out of printing contact therewith;

(j) an impression wheel driving means including a secondary drive wheel driven by said printing mechanism driving means, said pinch wheel being connected to said secondary drive wheel by a secondary drive shaft having an electromagnetic clutch therein to selectively cause rotation of said impression wheel in response to actuation of said start and stop switches;

(k) a drag clutch mounted on said bracket and connected to said secondary drive shaft to cause swinging of said bracket toward said plate wheel and printing of said strip simultaneously with initiation of rotation of said impression wheel and swinging of said bracket from said plate wheel simultaneously with stopping of rotation of said impression wheel whereby intervals of printing on said strip are selected in accordance with the setting of said start and stop magnets;

(l) a drier tube and heater blower mounted to said frame in the strip feed path downstream of said printing mechanism; and

(m) a second take-up tube extending upwardly and having an upward and downward traveling wheel weight therein to take-up slack in said strip.

4,356,766

ROTARY OFFSET SHEET PRINTING MACHINE FOR PRIME AND VERSO PRINTING

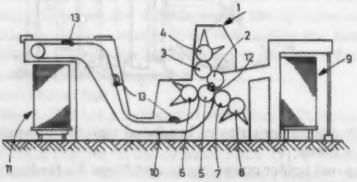
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 308,364

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040389

Int. Cl.³ B41F *13/24*

U.S. Cl. 101—232 **3 Claims**



1. Rotary offset sheet printing machine for prime and verso printing having

an impression cylinder (2);

three paired rubber cylinder-plate cylinder combinations (3, 4; 5, 6; 7, 8), each including a first, second and third rubber cylinder (3, 5, 7);

and a transport chain system including gripper means (13) and a chain (10) to transport sheets between the first rubber cylinder (3) and the impression cylinder (2) for first prime printing and past the second rubber cylinder (5) for second prime printing, and further past the third rubber printing (7) for verso printing,

wherein, in accordance with the invention,

the transport chain 10 is carried about the second rubber cylinder (5) and receives sheets from the impression cylinder (2) and leads said sheets over part of the circumference of the second rubber cylinder (5) to thereby have the second prime printing applied, and further lead the sheets against the third rubber cylinder (7) between the second rubber cylinder (5) to have the verso printing applied, the second rubber cylinder forming the counter cylinder for the third rubber cylinder (7).

4,356,767

CONSTANT PRESSURE ASSEMBLY FOR HAND OPERATED LABEL PRINTING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

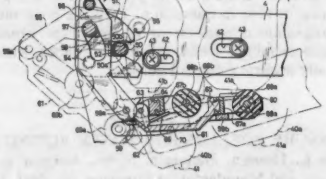
Division of Ser. No. 31,639, Apr. 19, 1979, Pat. No. 4,276,828.

This application May 16, 1980, Ser. No. 150,335

Claims priority, application Japan, Apr. 24, 1978, 53-48804

Int. Cl.³ B41F *1/08*

U.S. Cl. 101—295 **12 Claims**



1. A label printing machine, comprising:

a machine frame;

an operating lever pivotally connected to said machine frame and movable from a rest position toward an operative position;

a printing lever connected with said operating lever for moving between a respective rest position when said operating lever is in said rest position and a printing position as said operating lever moves to said operative position;

a printing device, including inkable imprinting types carried on said printing lever;

a platen connected to said machine frame and in opposition to said types as said printing device moves to said printing position, whereby said types will engage a label on said platen when said printing lever is in said printing position;

an ink supply device for inking said types, comprising:

an inking roller holder for holding two separated inking rollers;

turning means connected with said inking roller holder for moving said inking rollers over said types;

a starting cam which is pivotally connected to said machine frame at a different pivot than said operating lever, said starting cam also being pivotally connected to said turning means such that movement of said starting cam, in turn, moves said turning means;

a starting element on said printing lever and in engagement with said starting cam for causing pivoting of said starting

cam and said starting cam being shaped to permit relative shifting of said starting element with respect to said starting cam as a result of their pivoting about different respective pivots;

guide means supported in said frame for guiding said inking rollers along different respective paths and over respective said types as said inking rollers are moved by said turning means and said inking roller holder; said guide means includes a guide groove in said machine frame for guiding one of said inking rollers to regulate the path travelled by said one inking roller and for said one inking roller to move past first respective said types;

said guide means further comprising an elastic member for supporting the other of said inking rollers into abutment contact with a second respective said type of said printing device as said turning means moves said other inking roller over said second type.

4,356,768

DELAY FUSE WITH A SLOW RATE OF COMBUSTION AND A SMALL DIAMETER

Paul P. Cord, Saint Aubin de Medoc, and Louis R. Guy, Paris, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Aug. 21, 1980, Ser. No. 179,973
Claims priority, application France, Sep. 6, 1979, 79 22278
Int. Cl.³ C06C *7/00*
U.S. Cl. 102—275.9 **6 Claims**

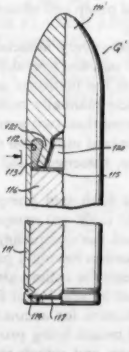
1. Delay fuse having a rate of combustion which is less than or equal to 4 mm/second, which has an external diameter less than or equal to 3 mm, in which the ratio of the external diameter to the core occupied by the pyrotechnic composition is between 1.4 and 2.0, which contains a pyrotechnic composition consisting of 25 to 45% by weight of tungsten having a particle size of between 2 and 6 microns, from 45 to 65% by weight of barium chromate, and from 8 to 15% by weight of potassium perchlorate and which is free of silica.

4,356,769

SELF-PROPELLING PROJECTILE FOR FIREARMS

Giovanni Galluzzi, Lecco, Italy, assignor to Giulio Fiocchi, S.p.A., Lecco, Italy

Division of Ser. No. 934,606, Aug. 17, 1978, Pat. No. 4,236,411, which is a continuation of Ser. No. 816,915, Jul. 19, 1977, abandoned, which is a continuation of Ser. No. 626,352, Oct. 28, 1975, abandoned, which is a division of Ser. No. 450,305, Mar. 12, 1974, Pat. No. 3,796,793. This application May 8, 1980, Ser. No. 147,878
Int. Cl.³ F42B *15/10*
U.S. Cl. 102—380 **3 Claims**



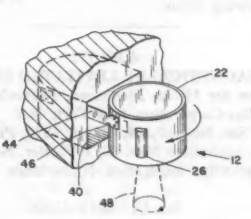
1. A self-propelling, side-firing projectile comprising a projectile body having a solid forward nose portion and a rearward cylindrical, casing-forming portion, said casing-forming portion defining a chamber having an outer side wall with the base of said nose portion defining the forward end of said chamber and with the latter being opened at its rearward end, means for closing the rearward end of said chamber remote from said nose portion, a propellant charge provided in said chamber, there being a rearwardly annular recess in the base of said nose opening toward the forward end of said chamber remote from the rearward end thereof for communication with said chamber, the outer side of said recess being continuous with said chamber outer side wall whereby said recess is presented in the radially outward portion of said nose base, the inner side of said recess being constituted of a generally annular extension projecting rearwardly of said projectile from the said nose base and being radially inwardly of said outer side wall, said inner side of said recess being free at its nose remote end, a priming mixture disposed in said recess for ignition by side percussion through said outer side wall, said annular extension of said recess being outwardly turned in the rearward, free end portion thereof toward said recess outer side wall thereby relatively reducing the spacing between the same in the zone of direct communication with said propellant thereby effecting a compression of the priming mixture within the said recess.

4,356,770

OVERFLYING MUNITIONS DEVICE AND SYSTEM

John V. Atanasoff, Andover; W. Kenneth Clark, Lowell; David Henderson, Carlisle, and Kenneth W. Wreghitt, Andover, all of Mass., assignors to Avco Corporation, Wilmington, Mass.

Filed Nov. 9, 1979, Ser. No. 92,898
Int. Cl.³ F42B *25/24*
U.S. Cl. 102—384 **24 Claims**



1. A munitions system comprising:

a missile having a projectile mounted for downward firing from the bottom of the missile;

means for propelling the missile along a trajectory to overfly a target;

stabilizing means for stabilizing the missile in flight with the projectile directed downward;

means for imparting a lateral precession motion to the missile relative to the target;

detector means carried by the missile for detecting a target below the missile; and

means carried by the missile for propelling the projectile downward from the missile toward the target upon detection of the target.

4,356,771

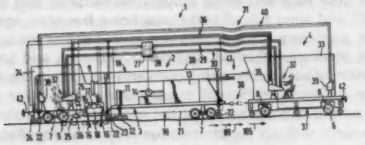
SELF-PROPELLED TRACK WORKING MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jun. 23, 1978, Ser. No. 918,685
Claims priority, application Austria, Aug. 16, 1977, 5925/77
The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.
Int. Cl.³ E01B *27/17*
U.S. Cl. 104—7 B **13 Claims**

1. A self-propelled track working machine arrangement comprising

(a) a first vehicle mounted for mobility on the track, the first vehicle including
(1) a drive for moving the vehicle along the track,
(b) track working means mounted on the first vehicle,
(c) means for viewing the track working means,
(d) means for actuating the track working means,
(e) a second and separate vehicle mounted for mobility on the track and forming a train with the first vehicle, the second vehicle including
(1) another drive for moving the second vehicle independently of the first vehicle along the track,
(f) control means for the common control of the vehicle drives,



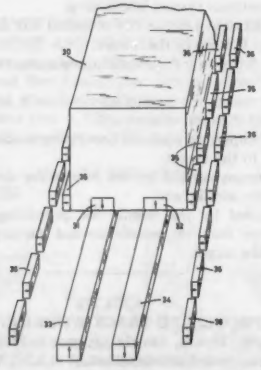
(g) a central monitoring and control apparatus for the drives and for the track working means mounted on the second and separate vehicle, the monitoring and control apparatus including
(1) remote control means for actuating the drives and for actuating the track working means, and
(2) means for monitoring the viewing means, and
(h) transmission means connecting the remote control means to the drives and to the actuating means for the track working means, and connecting the monitoring means to the viewing means.

4,356,772

MAGNETICALLY LEVITATED OBJECT

Hendrik van der Heide, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 467,384, May 6, 1974, Pat. No. 4,040,681. This application Mar. 10, 1977, Ser. No. 776,477
Claims priority, application Netherlands, May 21, 1973, 7307042
Int. Cl.³ B61B *13/00*
U.S. Cl. 104—282 **10 Claims**



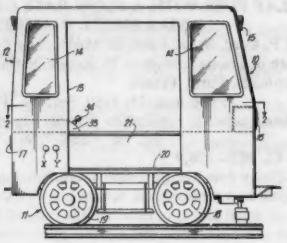
1. A magnetically levitated and propelled carriage comprising a first permanent support magnet secured to the carriage, said first permanent support magnet cooperating magnetically via an air gap with a plurality of fixed second support magnets arranged in the form of a rail, and a stabilizing device for said carriage which comprises a row of alternately oppositely magnetized first stabilizing magnets fixed to said carriage and a row of alternately oppositely magnetized second stabilizing magnets arranged parallel to the rail, the length of a second stabilizing magnet measured in the travelling direction of the levitated carriage being substantially equal to that of each first stabilizing magnet, and wherein the support magnets and the stabilizing magnets are related so that the dynamic stiffness due to the stabilizing device is greater than the static stiffness due to the support magnets.

4,356,773

HYDRAULICALLY DRIVEN RAILWAY CAR

Lawrence A. J. van Eyken, Kingston, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Filed Oct. 9, 1979, Ser. No. 83,216
Claims priority, application Canada, Oct. 17, 1978, 313552
Int. Cl.³ B61C *9/14, 13/00*; B61D *15/12*
U.S. Cl. 105—26.1 **14 Claims**



1. A motorized track car comprising:
(a) a wheeled lower portion for rolling along a railroad track;
(b) a platform carried by said wheeled lower portion and having raised seat means thereon for accommodating at least one worker transported by the track car;
(c) hydraulic power means for propelling said track car and providing power for auxiliary equipment, said power means being located entirely below said platform and comprising a combustion engine, hydraulic pump means drivingly connected to said engine, and hydraulic motor means driven by said pump and drivingly associated with at least one wheel of the car;
(d) control valve means, actuated by a lever projecting upwardly from the platform, to control the capacity of the pump as well as the direction of fluid flow therethrough and thereby vary the speed of travel of the vehicle from zero to maximum in each of forward and backward directions of travel, said pump and motor being in a closed loop fluid flow system;
(e) brake means operatively associated with at least one wheel of the track car, and operable by said lever projecting upwardly from the platform, said car being compact light weight vehicle manually removable from and onto the track by no more than two workers while at the same time having maximized utilization of space for accommodating an operator, passengers and tools on the platform; and
(f) means associated with said pump means for powering auxiliary hydraulic tools and equipment.

10. A motorized track car comprising:
(a) a lower frame portion having a pair of front wheels and a pair of rear wheels for rolling along a railroad track;
(b) a platform carried by said lower frame portion and having seat means thereon for accommodating at least four persons, said seat means being provided by a raised portion of the platform and which raised portion has compartments therein with access openings thereto for storing tools and equipment.

(c) propulsion means for said track car, disposed below said platform and, comprising a combustion engine, hydraulic pump means drivingly connected to said engine, and hydraulic motor means driven by said pump and drivingly associated with at least one wheel of the track car;
(d) control valve means to control the capacity of said pump and the direction of fluid flow therethrough thereby to vary the speed of travel of the vehicle from zero to maximum in each of forward and backward directions of travel, said pump and motor means being connected in a closed loop fluid flow path;
(e) brake means operatively associated with at least one wheel of the track car;
(f) single lever control means projecting upwardly from the platform for operating said control valve and located over said platform means and brake means; and
(g) a cab carried by said car and located over said platform providing shelter for personnel transported by said track car, said cab having windows, running lights, and tail lights mounted thereon.

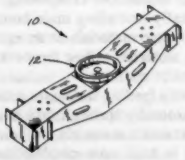
12. A motorized track car comprising:
(a) a lower frame portion having a pair of front wheels and a pair of rear wheels for rolling along a railroad track;
(b) a platform carried by said lower frame portion and having seat means provided by a central raised portion of the platform and in which raised portion there are compartments therein with access openings thereto for storing tools, equipment and the like;
(c) propulsion means for said track car, disposed entirely below said platform and comprising, a combustion engine, hydraulic pump means drivingly connected to said engine, and hydraulic motor means driven by said pump and drivingly associated with at least one wheel of the car;
(d) control valve means to control the capacity of said pump and the direction of fluid flow therethrough for the hydraulic motor means thereby to vary the speed of travel of the vehicle from zero to maximum in each of forward and backward directions of travel, said pump and motor means being in a closed loop fluid flow path;
(e) brake means operatively associated with at least one wheel of the track car;
(f) single lever control means projecting upwardly from the platform and movable from one position to another through a neutral position for respective forward and backward driving of the vehicle by operating said control valve means and movable laterally at the neutral position to operate said brake means; and
(g) a cab carried by said car and located over said platform providing shelter for personnel transported by said track car, said cab having windows, running lights, and tail lights mounted thereon.

4,356,774

TRUCK BOLSTER FLANGE AND WEAR RING

Charles W. Wear, 124 Chippewa Cir., and Robert J. Carl, 334 Shamrock Rd., both of Gretna, Nebr. 68028

Filed Feb. 19, 1980, Ser. No. 122,574
Int. Cl.³ B61F *5/16;* F16C *17/10, 41/00*
U.S. Cl. 105—199 C **2 Claims**



1. In combination,
a truck bolster,
a bolster ring positioned on said bolster and secured thereto by a weldment to form an upstanding flange, said bolster ring having inner and outer diameter surfaces,
said inner diameter surface including an upper portion and a cut-away lower portion defining a recess which is at least partially filled by said weldment,
and a wear resistant material secured to said upper portion of the inner diameter surface of said bolster ring in vertically spaced relation above said truck bolster, said wear resistant material comprising an alloy weldment.

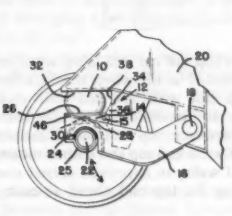
2. A bolster ring adapted to be welded to a truck bolster to form an upstanding flange thereon, comprising,
said ring having inner and outer diameter surfaces,
said inner diameter surface including a generally upright upper portion, a cut-away lower portion defining a recess below said upper portion for receipt of weld material and a bottom edge,
and a wear resistant material secured to said upper portion of the inner diameter surface of said bolster ring in vertically spaced relation above said bottom edge, said wear resistant material comprising an alloy weldment.

4,356,775

DAMPED RAILWAY CAR SUSPENSION

H. Neil Paton, 2521 W. Montlake Pl. East, Seattle, Wash. 98112; E. Frederick Gylland, Jr.; Jeffrey P. Sandys, both of Seattle, Wash., and John B. Skilling, 3000 Webster Point Rd., Seattle, Wash. 98105, assignors to H. Neil Paton and John B. Skilling, both of Seattle, Wash.

Division of Ser. No. 870,500, Jan. 18, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 83,755
Int. Cl.³ B60G *13/02;* B61F *5/34, 5/52*
U.S. Cl. 105—218 A **19 Claims**



1. A railcar suspension, comprising:
moveable load arm means for supporting an axle with respect to a railcar body;
a spring element;
means connected with the body forming a frictional damping surface;
a damping element; and
force resolving means carried by said load arm means between the axle and the body for supporting said spring element in load bearing relation with the body and for supporting said damping element in frictional force generating relation with said frictional damping surface such that said spring element will be compressed while simultaneously therewith said damping element will be urged into frictional engagement with said frictional damping surface in response to relative movement of the body of said load arm means.

17. A variable rate friction damper for a railcar suspension, comprising:
means connectable with a railcar body forming a frictional damping surface;
a damping element;
spring means for supporting said body; and
force resolving means positionable in load transmitting relation between a vehicle axle and the body for supporting said spring means in load bearing relation with the body and for supporting said damping element in frictional

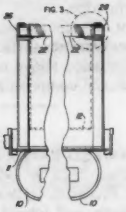
force generating relation with said frictional damping surface such that said spring means will be compressed while simultaneously therewith said damping element will be urged into frictional engagement with said frictional damping surface in response to relative movement of the body and the vehicle axle.

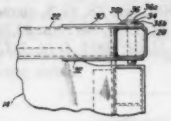
4,356,776

CORNER CONNECTOR FOR OPEN TOP RAIL CARS

Rene H. Brodeur, Wilmette, and Boris S. Terlecky, Fox Lake, both of Ill., assignors to Railgon Company, Chicago, Ill.

Filed Oct. 24, 1980, Ser. No. 200,403
Int. Cl.³ B61D *17/06, 17/08*
U.S. Cl. 105—406 R **5 Claims**





1. In an open top rail car including wheel trucks, a rail car underframe mounted on the wheel trucks, a floor supported by the underframe, side walls and end walls rigidly mounted to the underframe and extending upwardly and essentially perpendicularly therefrom, top side chords mounted to the upper edge of the side walls and top end chords mounted to the upper edge of the end walls, an improved corner connector for permanently joining the top end chord to each top side chord comprising:

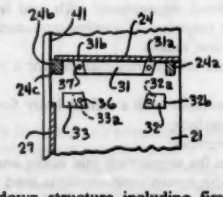
means for pivotably connecting the end of each top side chord to the end of the top end chord at a single pivot point so that forces applied to the side and end chords cause the side and end chords to pivot with respect to one another at said pivot point allowing the forces to be absorbed without fixed end moments at or failure of the connection of the side and end chords.

4,356,777

KNOCKDOWN STRUCTURE

Harlan F. Kellogg, 1617 Sprucewood, Rockford, Ill. 61107

Filed Jun. 23, 1980, Ser. No. 162,098
Int. Cl.³ A47B *3/00*
U.S. Cl. 108—111 **16 Claims**



1. In a knockdown structure including first and second panels each having side faces, bar means for detachably connecting the first panel to the second panel to extend transverse thereto at a preselected location on the second panel, the bar means including:

(a) an intermediate bar segment means attached to one side face on one of the panels and having end faces on opposite ends;

(b) two end bar segment means attached to one side face on the other of the panels and disposed at opposite ends of the intermediate bar segment means and having end faces on adjacent ends in abutting relation to the end faces on opposite ends of the intermediate bar segment means when the first panel is positioned to extend transverse to the second panel at said preselected location;

(c) the abutting end faces on the intermediate and end bar segment means defining supplementary angles, at least one of the end faces on the bar segment means attached to the second panel defining an included angle of less than 90° with the side face of the second panel and at least one of the end faces of the bar segment means attached to the first panel defining an included angle of greater than 90° with the side face of the first panel,

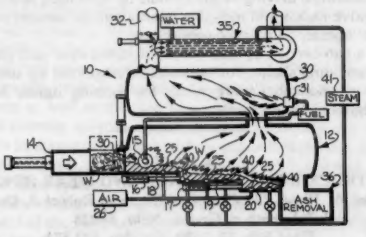
(d) the bar segment means attached to said one side face on said one of said panels having a panel engaging face extending transverse to said one side face of said one of said panels and engaging said one side face on the other of said panels when said first panel is at said preselected location on the second panel, the bar segment means attached to said one side face on said other of said panels having a panel engaging face extending transverse to said one side face on said other of said panels and engaging said one side face on said one of said panels when said first panel is in said preselected location on said second panel.

4,356,778

UNDERFIRE AIR AND STEAM SYSTEM AND INCINERATING PROCESS FOR A CONTROLLED STARVED-AIR INCINERATOR

Robert E. McRee, Jr., Charlotte, N.C., assignor to Environmental Control Products, Inc., Charlotte, N.C.

Filed Nov. 6, 1980, Ser. No. 204,490
Int. Cl.² B09B *3/00*; F23G *7/00*
U.S. Cl. 110—244 **2 Claims**



1. A controlled starved-air incinerator for incinerating a wide variety of waste materials characterized by minimized particulate emissions and clinker formation and by increased thermal efficiency, said incinerator comprising:

an elongate horizontally-extending main combustion chamber for receiving waste materials at an entrance end and burning the waste materials at low temperatures to generate vaporized volatile matter;

means for progressively feeding the waste materials from the entrance end horizontally through said main combustion chamber while the waste materials are being burned;

an underfire system in said main combustion chamber for supporting combustion and comprising means for supplying air under the burning waste materials at a plurality of predetermined longitudinally spaced-apart locations along the length of said main combustion chamber and at les-

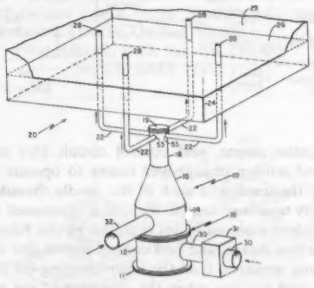
s-than-stoichiometric requirements for creating exothermic reactions between some of the fixed carbon in the waste materials and the oxygen in the air to produce volatile carbon dioxide vapors, and means for supplying steam under the burning waste materials at a plurality of other predetermined longitudinally spaced-apart locations along the length of said main combustion chamber and alternating with the locations of said means for supplying air and for creating endothermic "water-gas" reactions between additional fixed carbon in the waste materials and the steam to produce volatile carbon monoxide and hydrogen vapors and for absorbing undesired heat from the exothermic reactions along the length of said main combustion chamber; and

a secondary combustion chamber for receiving and finally burning the volatile vapors from the main combustion chamber and operating at greater-than-stoichiometric conditions to effect complete combustion; whereby, high localized temperatures along the length of said main combustion chamber are minimized so as to lessen clinker formation and vaporization of inorganics for minimizing the particulate emissions from said incinerator, and conversion of the fixed carbon portion of the waste materials into volatile matter is maximized for increasing the thermal efficiency of said incinerator.

4,356,779
FLUIDIZED BED SOLIDS FEED

James H. Porter, Martha's Vineyard; Robert Davis, Cambridge, and Jehangir Zakaria, Cambridge, all of Mass., assignors to Energy Resources Company, Inc., Cambridge, Mass.

Continuation of Ser. No. 53,077, Jun. 28, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 271,643
Int. Cl.³ F23D *19/02*
U.S. Cl. 110—245 **4 Claims**



1. A fluidized-bed combustor comprising

a combustion chamber and a distributor plate disposed in said chamber,

a plurality of fuel outlet feedports, evenly spaced across the surface of, and vertically penetrating, said distributor plate,

an air plenum beneath the distributor plate of the combustion chamber, and

a fuel feeding system for directing fuel into the combustion chamber through said distributor plate from below, said system including

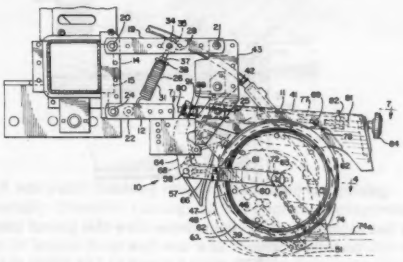
a fuel feeding chamber having a distributor plate dividing the chamber into air plenum and fuel fluidization sections, an air feed line connected to the air plenum of the fuel feeding system and a fuel particle feed line connected to the fluidization section for fluidizing fuel in the system, and

transport lines interconnecting the fluidization section and the combustion chamber for carrying fluidized fuel via apertures in the distributor plate of said fluidized bed combustor to said combustion chamber.

4,356,780
EQUALIZED FURROW FORMING APPARATUS FOR A SEED PLANTER

Jack L. Bauman, Naperville, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed May 28, 1980, Ser. No. 153,975
Int. Cl.³ A01C *5/06, 7/20*
U.S. Cl. 111—85 **2 Claims**



1. A furrow forming apparatus for a seed planter comprising:

(a) a frame, said frame being adapted to be attached for towing to a mobile power source;

(b) a pair of opposed, furrow forming disks rotatably mounted on said frame with the disks substantially contacting each other at the approximate point of entry into the soil and diverging apart rearwardly and upwardly to the direction of travel;

(c) a pair of gauge wheel means individually mounted on said frame forward of said disks for regulating furrow depth, each means comprising: a support pivotally mounted on said frame, a wheel located generally adjacent an outer surface of a disk and rotatably mounted on said support on an axis rearward of the disk axis of rotation; and

(d) equalizing means, pivotally mounted on said frame and extending between and positioned forward and adjacent said supports, whereby movement of a support and thus wheel in one direction produces the same movement of the other support and wheel in a contrary direction and where the lower wheel will fall to the soil and the movement of its support will be away from the equalizing means when out of the equalizing range.

4,356,781
THREAD HANDLING ARRANGEMENT FOR SEWING MACHINES

Donald Rodda, Butler, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jan. 12, 1981, Ser. No. 224,246
Int. Cl.³ D05B *1/12, 47/00, 49/02*
U.S. Cl. 112—184 **8 Claims**

1. In a sewing machine wherein a sewing needle and looptaker cooperate in the formation of lock stitches in a fabric, the combination comprising:

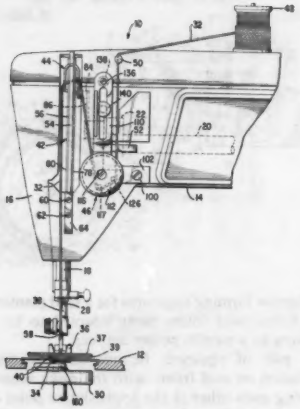
a thread source;

a thread tensioning device to which thread extends from the thread source;

a thread holder to which thread extends from the tensioning device and from which thread extends to the needle; and

a takeup for setting stitches and pulling thread through the tensioning device from the thread source, the takeup being movable in a stitch setting direction with thread to one end of its operating range whereat the thread is positioned for temporary retention in the holder and movable in the

opposite direction free of the thread holder to the other end of said operating range to permit thread to move in the holder from the temporary retention position to a position of reengagement with the takeup at said other end of its operating range whereby the path for thread between the tensioning device and needle is shortened, and a quantity of thread is supplied for use by the needle and looptaker; said thread holder including a pair of fixed elongate thread holding members which extend parallel to one another for at least a portion of their lengths and are spaced apart to receive the thread from the tensioning



device therebetween, the elongate thread holding members being formed for frictional contact of both members with the thread at spaced locations only on one member and at a location therebetween on the other member during movement in the holder in said opposite direction free of the takeup, the takeup being formed and being disposed relative to the thread holder to cause thread in the thread holder to be pulled out of contact with the said one member at the spaced apart thread contacting locations by the takeup and frictional drag on the thread to be thereby reduced in the thread holder during movement of the takeup in the stitch setting direction.

4,356,782

THREAD CHAIN SEWING METHOD AND DEVICE FOR USE IN THE TWO-NEEDLE OVERLOCK SEWING MACHINE

Yoshinari Ueyama, Osaka; Kikuo Mori, Kadoma, and Hideo Matsushita, Kobe, all of Japan, assignors to Pegasus Sewing Machine Mfg. Co., Ltd., Japan

Filed Jun. 24, 1980, Ser. No. 162,656

Claims priority, application Japan, Mar. 14, 1980, 55-32908

Int. Cl.³ D05B *1/20, 1/10*

U.S. Cl. 112—197 **10 Claims**

1. A device for backtacking thread chains in a two-needle overlock sewing machine having an outer chaining-off finger and an inner chaining-off finger, and a pair of thread-carrying needles arranged to drop one on either side of the inner chaining-off finger, comprising:

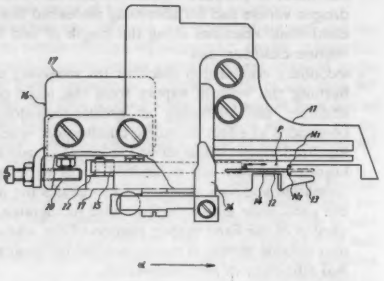
means for controllably retracting the inner chaining-off finger from an advanced position in which it is kept alongside the outer chaining-off finger, said means for retracting having means for driving the inner chaining-off finger forward and backward in a fabric feed direction, and for holding it in its advanced and retracted positions;

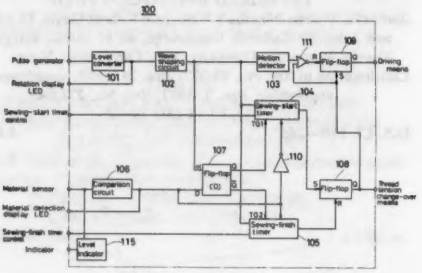
a thread tension changeover mechanism for controllably tensioning each of said needle threads tightly and slightly;

a fabric material detection means for detecting whether the fabric material is present at the needle drop points;

a stitching operation detection means for detecting operation of the sewing machine; and,

a control circuit for causing the driving means and the thread tension changeover mechanism to operate to hold the inner chaining-off finger in its advanced position and to change over the tension of each of the needle threads from a slightly tensioned state to a tightly tensioned state when fabric material is detected by the fabric material





detection means, said control circuit also causing the thread tension changeover means to operate to change over the tension of each of the needle threads from the tightly tensioned state to the slightly tensioned state when the fabric material is not detected by the fabric material detection means, and said control means also causing the driving means to hold the inner chaining-off finger in its retracted position when the operation of the sewing machine is not detected by the stitching operation detection means.

4,356,783

PORTABLE MOORING WHIP UNIT

Terje Myklebust, and David P. Murphy, both of 7851 Dunham Blvd., #10, Miami, Fla. 33138

Filed Sep. 18, 1980, Ser. No. 137,400

Int. Cl.³ B63B *21/08*

U.S. Cl. 114—230 **6 Claims**

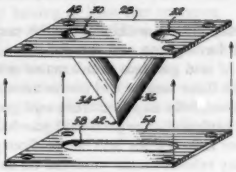
3. A portable mooring whip receptacle housing and a deck, said housing comprising:

a housing having a face plate, the face plate having a pair of apertures, each centrally located and adjacent each other on the face plate, the apertures being sized and shaped for receipt of a mooring whip, and

means for captivating the mooring whip including a pair of cylinder-like tubular member having a first open end fixedly attached to the apertures of the face plate, and

means for securing the housing to the deck of a water vehicle;

said face plate is mounted to the deck on a horizontal plane, each tubular member is mounted to the face plate at approximately a 60 degree angle from the horizontal plane of the deck and face plate connection;



said tubular members including a first open end each connected to their respective aperture, and a second closed end, the second closed ends of each of the tubular members joined such that a V joint is formed and the tubular members are not in open communication with one another.

4,356,784

INTEGRATED TUG-BARGE VESSEL

Michael J. Waters, Tracy; Andre Taschereau, St-Pierre de Sorel, and Jacques Fortin, Sorel, all of Canada, assignors to Marine Industrie Limitee, Quebec, Canada

Filed Dec. 22, 1980, Ser. No. 218,833
Int. Cl.³ B63B *21/56*
U.S. Cl. 114—248 **13 Claims**

1. An integrated tug-barge vessel having a separable barge and tug,

said barge including (1) a pair of spaced rearwardly extending stern projections defining a notch in the stern of said barge, each projection having an inboard sidewall and an adjacent upper surface (2) a buttress projecting from the inboard sidewall of each said projection, and (3) means on each said upper surface for engaging the deck of said tug to limit upper movement thereof, and

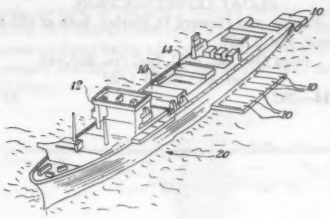
said tug including sidewalls extending from stem to stern and a pair of spaced rails extending longitudinally of each said sidewall to define a guideway for receiving said buttress, said guideway converging to a constriction having a shape complementary to said buttress to provide, when said buttress is received therein, a rigid support restricting relative vertical and torsional movements between tug and barge when integrated.

4,356,785

TRANSPORTABLE PROCESS MODULES

Robert E. Bailie, 2110 SW. 28th Way, Fort Lauderdale, Fla. 33312

Filed Dec. 12, 1978, Ser. No. 968,629
Int. Cl.³ B63C *1/00, 3/00*
U.S. Cl. 114—264 **5 Claims**



1. A sea water desalting evaporator system, comprising:

a generally floatable rectangular self-contained evaporator means having side walls substantially 61 feet in length and 13 feet in height, front and rear wall members substantially 31 feet in width and 13 feet in height, and top deck and bottom hull members substantially 61 feet by 31 feet for transportation aboard a LASH barge carrier;

a first conduit means disposed within said evaporator means for the flow of a first fluid therethrough and to a like evaporator means;

a plurality of vertically extending support means for fastening said evaporator means aboard said LASH carrier, said support means projecting slightly above said top deck member and below said bottom hull member;

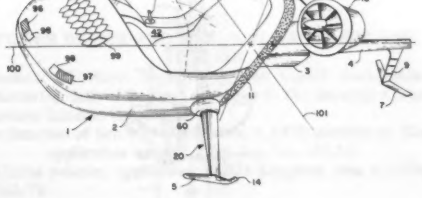
a second conduit means disposed within said evaporator means for the flow of a second fluid therethrough and to a like evaporator means.

4,356,786

HYDROFOIL BOAT

Gordon P. Tuggle, P.O. Box 6522, Portsmouth, Va. 23703

Filed Sep. 27, 1979, Ser. No. 80,125
Int. Cl.³ B63B *1/28*
U.S. Cl. 114—280 **30 Claims**



1. An improved hydrofoil boat comprising: a hull and propulsive means attached thereto; hydrofoil means connected to said hull for hydrodynamically supporting the boat; means connected to said hull and connected to said hydrofoil means at an intersection for moving said hydrofoil means from a position approximately parallel to the lateral axis of the boat to positions of increasing angles of inclination and said means for moving also being for alternatively permitting operation of

said hydrofoil means in a submerged configuration wherein said hydrofoil means together with said intersection are completely submerged, and in a surface piercing configuration wherein said hydrofoil means are partially submerged and said intersection is above water; and means for steering the boat through the water.

4,356,787

FLOAT CONSTRUCTION

Richard C. Harley, and Howard D. Harley, both of 685 E. Pearl St., Bartow, Fla. 33830

Filed Dec. 30, 1977, Ser. No. 865,843
Int. Cl.³ B63B *1/20*
U.S. Cl. 114—292 **12 Claims**

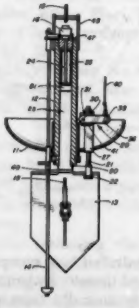
1. A float construction of the type primarily intended for use in supporting a seaplane, said float comprising: a main body defining a major longitudinal dimension; a step extending across the bottom of said main body in substantially transverse relation to said major longitudinal dimension; a bow extending forwardly of said step, said bottom of said main body curving upwardly as it extends forwardly of said step along said bow, said bow defining a simple concave cross-section with regard to said major longitudinal dimension extending inwardly from the outboard edges of said bow with the apex of said cross-section defining the longitudinal midpoint of said bow; and a tail extending rearwardly of said step, said tail comprising a first tail section defining a simple concave cross-section with regard to said major longitudinal dimension and a second tail section defining a simple convex cross-section with regard to said major longitudinal dimension, wherein said first and said second tail sections each define congruent cross-sectional planes at their intersection, said first tail section extending rearwardly from said step and said second tail section extending rearwardly from said first tail section.

4,356,788

DEEPWATER PROPELLANT EMBEDDED ANCHOR HAVING EMERGENCY RELEASE MECHANISM

Melvin Stern, Ventura, and Daniel G. True, Camarillo, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 27, 1981, Ser. No. 258,128
Int. Cl.³ B63B *21/28*
U.S. Cl. 114—295 **12 Claims**



1. A propellant embedded anchor system having an emergency release mechanism for safely disarming the system in case of malfunction or misfire, comprising:

a. a gun assembly, including:
a gun barrel;
an explosive charge within said gun barrel; and
a firing means operable to detonate said explosive charge within the gun barrel;
b. a fluke assembly, including:
an anchor fluke means;
a mooring means connected to said anchor fluke means; and
a piston means fitting within the open end of said gun barrel and having one end thereof extending from the open end of said gun barrel and mated with one end of said anchor fluke means; said piston means being operable to be forcefully expelled from said gun barrel upon firing the explosive charge in said gun barrel to propel said anchor fluke means into the seafloor;
c. an emergency release means mounted on said gun assembly and connecting said gun assembly to said fluke assembly; said emergency release means including at least one release mechanism;
d. each said at least one release mechanism, comprising:
an elongated anchor link means having an upper end and a lower end; the lower end of said anchor link means being connected to said anchor fluke means with a break-away means; said break-away means being operable to be sheared by the force of said piston means against said anchor fluke means when said explosive charge is fired to propel said piston means from the gun barrel and embed said anchor fluke means into the seafloor;
a vertical guide channel mounted on said gun assembly;
the upper end of said elongated anchor link means being operable to slidingly fit within said vertical guide channel;
the upper end of said vertical guide channel being provided with a latch means; said latch means, when in a locked position, operating to lockingly engage the upper end of said elongated anchor link means; and
disengage means which, when actuated, is operable to unlock said latch means from the upper end of said anchor link means for allowing said anchor link means to slide free from said vertical guide channel;
whereby release of the upper end of said anchor link means permits said anchor fluke means to fall away from said gun assembly allowing said piston means and said explosive charge to fall out of said gun barrel and permit seawater to enter the gun barrel thereby disarming said gun assembly.

4,356,789

EMERGENCY EVACUATION SYSTEM FOR OFFSHORE OIL PLATFORM

Dillard S. Hammett, Dallas, Tex., assignor to SEDCO, Inc., Dallas, Tex.

Filed Oct. 29, 1979, Ser. No. 88,760
Int. Cl.³ B63B *23/00, 27/00*
U.S. Cl. 114—365 **4 Claims**

3. A method for evacuating personnel from an offshore oil platform, said platform including a lifeboat equipped with a single point means for attaching a recovery line and suspended from a lowering apparatus, and further including a retractable support adapted to engage an undersurface of said lifeboat, comprising the steps of:
loading personnel into said lifeboat;
moving said support into an extended position;
lowering said lifeboat onto said support;
disengaging said lowering apparatus from said lifeboat;
maneuvering a service vessel having means for lifting mounted thereon into a position proximate said platform;
maintaining a predetermined distance from said platform and without connecting said service vessel to said platform;
attaching said means for lifting to said lifeboat while substantially maintaining the position of the service vessel with respect to said platform;

lifting said lifeboat substantially vertically from said platform; and

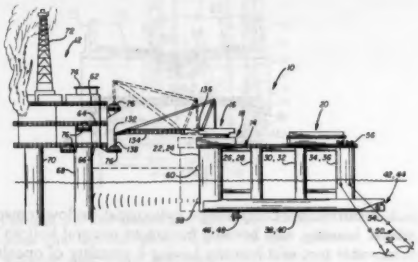
transporting said lifeboat from said platform to said service vessel.

4. An emergency evacuation system for an offshore oil platform, comprising:

a portable evacuation shelter having a plurality of fire resistant walls cooperating to form a protective enclosure, said enclosure having at least one entrance,

means for providing ventilation, and single point means for attaching a recovery line centrally located above the center of gravity of said shelter;

means attached outboard of at least one side of said platform for supporting said shelter, said support means engaging said shelter from beneath and providing unobstructed



vertical clearance so permitting said shelter to be vertically removed from said oil platform;

means for transporting said shelter from said platform to a point of safety comprising a vessel, said vessel including:

a system for maintaining said vessel at a predetermined station with respect to said platform standing off from said platform and without being connected to said platform;

said system for maintaining said vessel including means for indicating the position of said vessel with respect to submerged and above surface portions of said platform; and

a revolving crane mounted on said vessel for rotation about a vertical axis, said crane including a base and a main boom pivotally mounted for rotation about a horizontal axis for positioning said boom to extend above said shelter for lifting said shelter substantially vertically from said supporting means and placing said shelter on said vessel.

4,356,790

TEMPERATURE INDICATOR

Glen R. Gee, Selma, Calif., assignor to Huntington Tool, Inc., Duarte, Calif.

Continuation of Ser. No. 169,385, Jul. 16, 1980, abandoned, which is a continuation of Ser. No. 962,005, Oct. 20, 1978, abandoned. This application May 21, 1981, Ser. No. 266,084

Int. Cl.³ G01K *11/08*

U.S. Cl. 116—216 **14 Claims**

1. A temperature indicator comprising:

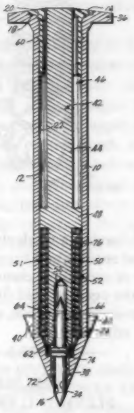
an elongated housing having a first bore extending axially through it, with an upper opening at an upper end of the first bore and a lower opening that opens into a second bore extending through a lower end of the housing, at least a portion of the second bore being of smaller diameter than the first bore, forming an annular shoulder in the housing between the first bore and the second bore;

an elongated temperature-indicating element slidable axially in the first bore and having a narrow passage extending into the element, the narrow passage having an opening adjacent said annular shoulder;

a first T-shaped member having (1) a temperature-sensing needle with the pointed end projecting through the second bore and outside the housing, and (2) a temperature-sensing head seated on the annular shoulder for retaining the first T-shaped member in the housing;

a second T-shaped member having (1) a shank secured in the narrow passage of the temperature-indicating element, and (2) a head adjacent the head of the first T-shaped member;

the needle and the head of the first T-shaped member being made of metal, the head of the second T-shaped member having a second surface on a side thereof opposite the shank, the head of the first T-shaped member having a first surface on a side thereof opposite the needle, the first and second surfaces being adjacent one another and extending generally normal to the axis of the first bore and the second bore;



a thin film of a solidified fusible material between the first and second surfaces of the T-shaped members retaining the second T-shaped member in a fixed position for inhibiting sliding axial movement of the temperature-indicating element in the first bore, the fusible film having a film thickness substantially less than the radius of the fusible film; and

means for applying a force to the temperature-indicating element for triggering sliding movement of the element in the first bore upon fusion of said fusible film at a preselected temperature sensed by the first T-shaped member for releasing the element from its fixed position to move the element through the upper opening of the first bore in the housing.

4,356,791

FILTER DEVICE AND FILTER ELEMENT FOR USE THEREIN

Elizabeth M. Ward, Maidenhead, and Gerald Buckingham, Kettering, both of England, assignors to The Diversey Corporation, London, England

Continuation of Ser. No. 45,855, Jun. 5, 1979, abandoned. This application Apr. 17, 1981, Ser. No. 255,262

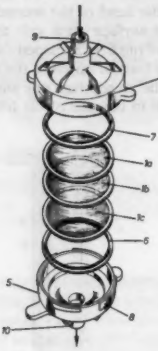
Claims priority, application United Kingdom, Jun. 6, 1978, 26380/78

Int. Cl.³ A01J *9/02*

U.S. Cl. 119—14.43 **7 Claims**

1. A filter device for use in a pipeline flow system, which device comprises a separable two part housing defining a filter chamber enclosed but for the provision of a fluid inlet and fluid outlet of substantially the same cross sectional area oppositely disposed in end portions of the parts of the housing, the housing containing between the fluid inlet and the fluid outlet a plurality of circular flat filter elements of decreasing mesh size for successively filtering out particles of decreasing size, which

filter elements each comprise, set in an annular frame, which frames are clamped in a stack between the end portions of the parts of the housing a first substantially inextensible plastic filter mesh, the size of which filter mesh is decreased in the flow direction down to a finest mesh size of from 40 to 80 microns, and a second and coarser substantially inextensible



plastic filter mesh having a mesh size in the range of from 160 to 950 microns and serving as a support mesh positioned on the downstream side of each filter element, which support meshes are coarser than the coarsest said first mesh and which meshes when the filter device is not in use, are generally out of contact with the or each adjacent mesh.

4,356,792

FLOORING SYSTEM

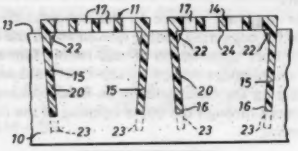
Peter J. Leverett, Kemballs Farm, Brettenham Rd., Buxhall, Stowmarket, Suffolk, England

Filed Sep. 19, 1980, Ser. No. 188,720

Claims priority, application United Kingdom, Sep. 28, 1979, 7933748

Int. Cl.³ A01K *1/00*

U.S. Cl. 119—28 **11 Claims**



9. A flooring system comprising a plurality of parallel load-bearing spaced plastics material joists supporting a plurality of load-bearing plastics material flooring members which extend substantially at right angles to the joists, each said flooring member having a flat web and a pair of flanges projecting downwardly from the web and being angled towards one another thereby to define a substantially channel-shaped cross-section, each said joist having a plurality of pairs of spaced slots having a width substantially the same as a width of said flanges and extending downwardly from an upper surface thereof and each said pair of slots being disposed to receive said flanges of a flooring member carried by the joist but said slots having a length which is less than the depth of said flanges as measured from said web of the channel-shaped section to the free edges of said flanges, and said flanges being provided with spaced slots appropriately positioned for receiving parts of the joists in the region of an intersection between a joist and a flooring member, whereby a plurality of joists may be interengaged with a plurality of flooring members, and with said web of each flooring member resting on said upper surfaces of the associated joists, said joists being substantially triangular in cross-sectional shape and adapted for assembly with said flooring members such that the apexes of said triangular cross-sectional joists are uppermost and said webs of said flooring members bear on said apexes.

4,356,793

BIRD FEEDER

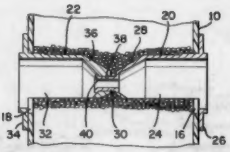
Morton L. Blasbalg, 26 Sandro Dr., Warwick, R.I. 02886

Filed Nov. 16, 1977, Ser. No. 852,082

The portion of the term of this patent subsequent to Aug. 2, 1996, has been disclaimed.

Int. Cl.³ A01K *39/01*

U.S. Cl. 119—51 R **4 Claims**



1. A bird feeder comprising a cylindrical, hollow transparent plastic housing, said housing having an integral bottom and a removable top, said housing having a plurality of openings in vertically spaced and circumferentially staggered relation to each other, each of said openings having a complementary opening in aligned diametrically opposed relation, a baffle member extending into each of said openings, said baffle members having an open bottom to allow a bird to feed on the seed in said housing, a rod extending through said housing below each of said pairs of opposed openings, said rod extending outwardly from said housing to form a perch below each of said openings, and means on the inner ends of said baffle members in said opposed complementary openings for locking said baffles to each other, wherein said locking means comprises an integral axial tubular portion extending from the inner end of one baffle and an axial opening in to complementary baffle, said tubular portion extending into said opening, whereby the inner end of said tubular portion may be swaged to lock said complementary baffles to each other.

4,356,794

HOT WATER BOILER

Johannes Bouman, Nuenen, and Peter J. M. van der Linden, Breda, both of Netherlands, assignors to Tricentrol Benelux B.V., Breda, Netherlands

Filed Oct. 27, 1980, Ser. No. 201,276

Claims priority, application Netherlands, Oct. 25, 1979, 7907833

Int. Cl.³ F22B *7/00*

U.S. Cl. 122—158 **8 Claims**

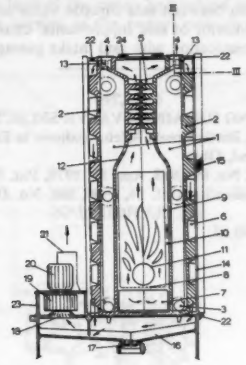
1. A hot water boiler having

(a) an assembly comprising at least two juxtaposed hollow castings which contain water passages for the water being heated and are joined together to form said assembly, which encloses a combustion chamber and a flue for burned gases extending upwardly from said combustion chamber,

(b) passages extending downwardly outside said castings on opposite sides of said assembly and connected at their upper ends to the said burned gas flue, whereby the burned gases flow downwardly through the said downwardly extending passages,

(c) a plurality of ribs cast integrally with the castings on the outsides thereof so as to project into the said downwardly extending passages,

(d) a sump which is located below the castings and into which the said downwardly extending passages open so that the burned gases flow into the sump,
(e) a discharge conduit for the burned gases,
(f) a blower connected to the sump and to the discharge conduit for forced discharge of the burned gases from the sump to the discharge conduit,



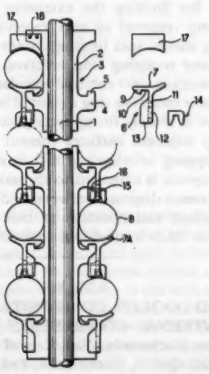
(g) means for the extraction from the sump of condensate from the burned gases which in use collects therein, wherein said water passages in the castings run mainly upwardly substantially straight and vertically with a widening upwardly where the combustion chamber meets the burned gas flue and wherein said ribs on the outside of the assembly of castings project farther at the upper end of the castings than at the lower end.

4,356,795

DEVICE FOR FIXING A PANEL OF HEAT-EXCHANGE TUBES

Jean-Louis Loiez, Lille, and Jean Fournier, Rochefort en Yvelines, both of France, assignors to Stein Industrie, Velizy-Villacoublay, France

Filed Jan. 8, 1981, Ser. No. 223,534
Claims priority, application France, Jan. 11, 1980, 80 00582
Int. Cl.³ F22B 37/06
U.S. Cl. 122—511 5 Claims



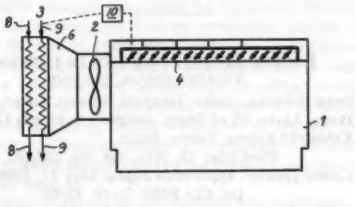
1. A device for fixing a panel of horizontal or slightly inclined heat exchange tubes on vertical tubes or beams provided with longitudinal fins, wherein the device includes:
means defining a series of vertically spaced horizontal shoulders on the longitudinal fins of each vertical tube or beam, said shoulders having upwardly projecting rims at their ends remote from said vertical tubes or beams;
a series of parts which form latches having upper surfaces which are substantially flat on one side and which rise on the other side in a circle with a radius of curvature equal to or slightly greater than that of the radius of said horizontal tubes, the parts which form latches having, under the substantially flat sides of their upper surfaces middle portions, noses which are separated from said middle portions by recessed portions, said recessed portions fitting into the projecting rims of the shoulders, vertical shoes in planes at 90° to the planes of vertical symmetry of said parts, said shoes being of nearly the same vertical height as the rims of the shoulders and having in their bottoms holes whose axes are perpendicular to their longitudinal axes; and
a series of dogs whose dimensions are such as to allow them to be installed in said holes of the parts which form latches and being positioned therein, each dog having downwardly projecting legs whose height is such that their ends come into contact with the upper portion of a horizontal tube which rests on the upper surface of the part which forms a latch immediately below when inserted in said holes, and a side rim in its upper portion such that when urged upwards, the dog abuts against the lower surface of the shoulder on which the part which forms a latch is fixed with the dog engaged in a hole in the shoulder.

4,356,796

COOLING SYSTEM FOR HYDRONAMIC RETARDER OF INTERNAL COMBUSTION ENGINE

Paul Tholen, Gladbach, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 237,114
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1980, 3007346
Int. Cl.³ F01P 1/06
U.S. Cl. 123—41.31 4 Claims

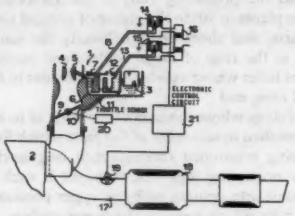


1. In combination with an air-cooled internal combustion engine equipped with a hydronamic retarder,
a cooling air shroud for directing cooling air past said engine in cooling relationship thereto,
a cooling air fan for pushing air through said shround,
retarder oil cooler means located on the upstream side of said fan remote from the engine,
circuit means for circulating retarder oil through the cooler means, and
exhaust valve means positioned in said shroud for causing at least a portion of the cooling air flow to be diverted from the shroud when the valve means are opened whereby to decrease the overall pressure loss of the system and thereby increase the total flow of cooling air through the cooler, said valve means being openable only when the retarder is in operation.

4,356,797
SYSTEM FOR CONTROLLING AIR-FUEL RATIO

Fujio Matsui, Mitaka, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Aug. 1, 1980, Ser. No. 174,377
Claims priority, application Japan, Aug. 2, 1979, 54-98850; Aug. 2, 1979, 54-98851; Aug. 2, 1979, 54-98852
Int. Cl.³ F02D *5/00*
U.S. Cl. 123—440 **8 Claims**



1. In a system for controlling an air-fuel ratio for a carburetor of an internal combustion engine having an intake passage, an exhaust passage, a throttle valve, detecting means for detecting the concentration of a constituent of exhaust gases passing through said exhaust passage, air-fuel mixture supply means for supplying to the intake passage, and electromagnetic valve for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply means, the improvement comprising:

a comparator means for comparing the output signal of said detecting means with a reference value,

integration circuit means for integrating the output of said comparator means,

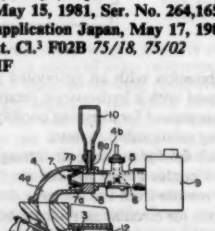
middle value detecting circuit means for providing a plurality of middle values between adjacent two maximum and minimum values of the output of said integration circuit, and

driving circuit means for generating an output in dependency upon the output signal of said middle value detecting circuit means for driving said electromagnetic valve means, whereby the air-fuel ratio is controlled to a value substantially equal to stoichiometric air-fuel ratio.

4,356,798
INTAKE SYSTEM FOR USE IN INTERNAL COMBUSTION ENGINE

Hiromu Sakaoka, Asaka; Teruyuki Nakano, Tokyo, and Shingo Ikeda, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1981, Ser. No. 264,165
Claims priority, application Japan, May 17, 1980, 55/64682
Int. Cl.³ F02B *75/18, 75/02*
U.S. Cl. 123—52 MF **7 Claims**



1. An intake system for use in an internal combustion engine which includes a combustion chamber defined by a piston and a cylinder, a cylinder head formed therein, an intake passage means, a carburetor and a throttle valve adapted to supply air-fuel mixture therethrough, comprising:

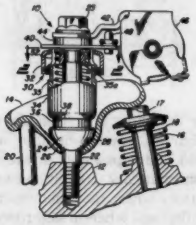
(a) a check valve positioned at a downstream side of said throttle valve, said check valve being adapted to permit inflow of said air-fuel mixture but prevent backflow thereof during a compression stroke of said engine; and

(b) a supplemental chamber connected to an intake passage at a position between said throttle valve and said check valve, an interior of said supplemental chamber being in fluid communication with said intake passage.

4,356,799
SPRING RETAINER-VALVE SELECTOR

David P. Clark, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 897,833, Apr. 19, 1978, Pat. No. 4,262,640. This application Oct. 14, 1980, Ser. No. 196,965
Int. Cl.³ F02D *13/06*
U.S. Cl. 123—90.65 **4 Claims**



1. A spring capsule subassembly for a valve selector comprising:

(a) a spring retaining member having a cup-shaped configuration, said spring retaining member having an internal annular groove formed on the inner periphery and located near the open end thereof;

(b) a spring receiving member having a cup-shaped configuration, said spring receiving member having an external annular groove formed on the outer periphery and located near the open end thereof, said spring retaining member having the open end thereof slidably received over the open end of said spring receiving member in telescoping arrangement to form a capsule of variable length;

(c) means for limiting the extension of said capsule and preventing removal of said receiving means from said retaining means, said limiting means including,

(i) an inner retaining ring received in closely fitting arrangement in said external annular groove,

(ii) an outer retaining ring mounted in said internal annular groove in closely fitting arrangement, said rings having axially adjacent surfaces thereof disposed in radially overlapping relationship and in mutual contact when said capsule is extended to its maximum length; and,

(d) spring means disposed between said retaining and receiving members and operable to bias said members away from each other to give said capsule its maximum length.

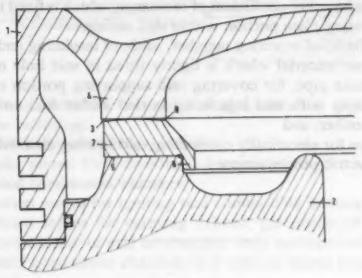
4,356,800
LIQUID-COOLED, COMPOSITE PISTON FOR INTERNAL-COMBUSTION ENGINES

Horst Moebus, Neckarsulm, Fed. Rep. of Germany, assignor to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,789
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832970
Int. Cl.³ F02F *3/22*
U.S. Cl. 123—193 P **9 Claims**

1. In a liquid-cooled, composite piston for internal-combus-

tion engines, particularly for medium-speed diesel engines, comprising a lower part made of a material comprising an eutectic aluminum-silicon alloy which lower part is connected to an upper part comprised of a ferrous material, said upper part formed on its underside with a concentric rib, which rib faces an opposite top surface of the lower part and is so arranged that the rib constitutes the radially inner boundary of an annular cooling channel, which is disposed in the upper part behind a top land of the piston and behind at least part of a ring-carrying portion of the piston, said rib also defining a



central cooling chamber, which is disposed in the upper part and which communicates with the cooling channel by radial coolant bores, the improvement comprising a ring comprised of a ferrous material concentrically disposed and gripped between the surface of said concentric rib and the opposite top surface of the lower part of the piston in an arrangement in which the confronting surfaces of the rib and the gripped ring are in peripheral rolling contact with one another, said ring constituting a portion of the radially inner boundary of said annular cooling channel and a portion of the radially outer boundary of said central cooling chamber.

4,356,801

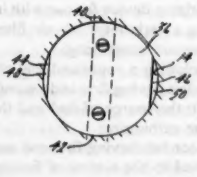
THROTTLE BODY FUEL INJECTION

Kenneth A. Graham, Birmingham, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Feb. 2, 1981, Ser. No. 230,228

Int. Cl.³ F02M *9/08*

U.S. Cl. 123—337 **2 Claims**



1. In a throttle body fuel injection system for an internal combustion engine having a fuel injector which sprays fuel into an induction passage for mixture with induction air passing through the passage, an idle speed system comprising: a throttle blade in the induction pasage as the sole control for air and fuel flow therethrough and pivotal between an open position which provides minimal restriction to the flow and an idle position which provides maximum restriction to the flow therethrough; the throttle blade being configured so that in an idle position a substantial portion of the circumferential edge of the blade approaches sealing contact with the wall of the induction passage to thereby block the flow of air and fuel therebetween; the remaining circumferential portion of the throttle blade being spaced just sufficiently with respect to the wall of the induction passage when the throttle blade is in its idle position to provide necessary idle air and fuel flow therebetween at sonic velocities adequate to thoroughly mix the fuel with the air as both pass between the blade and the wall of the induction passage; the slight spacing between the blade and the wall of the passage provided by a blade edge section inwardly contouring with respect to the wall of the induction passage thereby defining an aperture.

4,356,802

VALVE SYSTEM FOR REGULATING THE IDLING SPEED OF OTTO ENGINES, PARTICULARLY AUTOMOBILE ENGINES

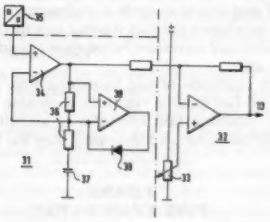
Eckhart Kern, Hofheim; Harald Collonia, Glashütten, and Herbert-Hans Groh, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 12, 1980, Ser. No. 215,898

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949884

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—339 **9 Claims**



1. In a valve arrangement system for regulating the idling speed of Otto engines, particularly automobile engines, by controlling the amount of air on an outlet side having suction vacuum with an electromechanical setting member which comprises a valve element which limits an effective outlet cross section, the valve element being moveable by an electric drive member and being in communication on one side with the outlet side, and having a circuit which operatively controls the setting member as a function of the speed of rotation, the improvement wherein

the valve element is mounted substantially free of friction,

compensation means for exerting on the valve element a compensating force which opposes the force caused by the suction vacuum,

an rpm transducer providing a variable signal dependent on the actual rotational speed of the engine,

said circuit includes,

a first difference amplifier having one input acted on by an electric value corresponding to the desired idling speed and another input operatively connected to said rpm transducer,

said first difference amplifier having an output connected to said electric drive member,

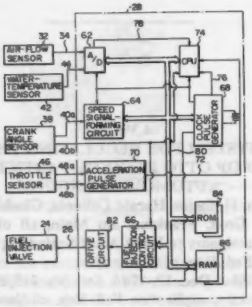
a differential amplifier means for connecting said rpm transducer to said first difference amplifier and having a differential portion which is switchable to effectiveness upon a reduction in the speed and to inactive upon an increase of the speed.

4,356,803

METHOD AND APPARATUS FOR CONTROLLING THE FUEL FEEDING RATE OF AN INTERNAL COMBUSTION ENGINE

Hideo Miyagi, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 5, 1981, Ser. No. 240,826
Claims priority, application Japan, Mar. 7, 1980, 55-28017
Int. Cl.³ F02B 3/00; F02M 13/04, 51/00
U.S. Cl. 123—492 12 Claims



1. A method of controlling the fuel feeding rate of an internal combustion engine, comprising the steps of:

generating at least one first electrical signal when acceleration of said engine exceeds a predetermined degree;

instantly increasing the fuel feeding rate of the engine by a predetermined increment in response to said first electrical signal; and

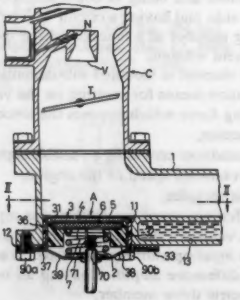
after each execution of said increasing step, decreasing the increased fuel feeding rate with a variable reduction rate which reduction rate decreases in accordance with the lapse of time after said increasing step has been executed.

4,356,804

FUEL EVAPORATOR

Toshihiko Igashira, Toyokawa; Ken Nomura, Okazaki, and Seiko Abe, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 13, 1980, Ser. No. 177,799
Claims priority, application Japan, Aug. 17, 1979, 54/113959[U]; May 12, 1980, 55/64721[U]
Int. Cl.³ F02M 31/00
U.S. Cl. 123—549 9 Claims



1. A fuel evaporator disposed in a wall of an intake pipe of an internal combustion engine comprising:

a metallic casing composed of a heating plate portion and an integrally formed supporting portion composed of a plurality of strip shaped legs which project downwardly in a direction perpendicular to said heating plate portion, respectively, at predetermined intervals from the outer periphery of said heating plate portion and outwardly at the lower ends thereof to form flange portions;

said supporting portion being inserted in a hole provided in said wall of said intake pipe so that said heating plate portion is exposed to the interior of said intake pipe;

said flange portions being fixed to an outer wall of said intake pipe;

a heating element composed of a ceramic having a positive temperature coefficient of resistance, which is fixed to said heating plate portion within said casing;

a cylindrical covering member, made of insulating and adiabatic material which is tightly fitted in said hole of said intake pipe, for covering said supporting portion of said casing with said legs being buried within said covering member; and

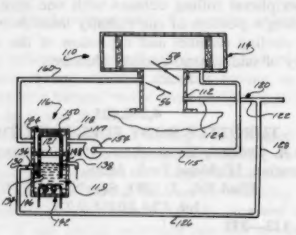
means for electrically connecting said heating element to an electric power source.

4,356,805

FUEL VAPORIZING DEVICE

Frank J. Kler, 508 W. Hollywood, Detroit, Mich. 48203

Filed Jul. 22, 1980, Ser. No. 171,114
Int. Cl.³ F02M 31/00, 17/18
U.S. Cl. 123—557 7 Claims



1. A fuel vaporizing device for use with internal combustion engines including a carburetor, an air filter, and a source of fuel, the improvement comprising:

a vaporizer including a vaporized fuel chamber;

a first fuel conduit having first and second ends, the first end connected to the source of fuel and the second end connected to the carburetor;

a second fuel conduit having first and second ends, the first end connected to the source of fuel and the second end connected to the vaporizer;

means for maintaining a predetermined fuel level in the vaporizer;

means for vaporizing the fuel in the vaporizer, the vaporizing means including means, immersed within the fuel in the vaporizer, for vaporizing the fuel, and a baffle positioned above the fuel in the vaporizer and dividing the vaporizer into a fuel chamber and a vapor chamber; and

an air pump including an air inlet and an air discharge, the air discharge being interconnected to the vapor chamber of the vaporizer; and

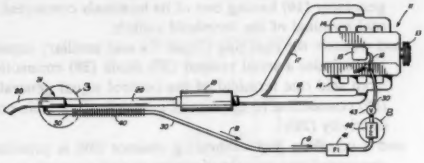
wherein the air pump passes air through the vapor chamber in which the air collects vapor and the air and vapor mixture is passed to the carburetor and mixed with air passing therethrough.

4,356,806

EXHAUST GAS RECIRCULATION SYSTEM

Charles W. Freesh, 2618 E. Elm, Phoenix, Ariz. 85016

Filed Nov. 13, 1980, Ser. No. 206,611
Int. Cl.³ F02M 25/06
U.S. Cl. 123—570 5 Claims



1. In combination with an internal combustion engine, said engine including,

at least one combustion chamber,

intake means for delivering a combustible fluid mixture to said combustion chamber,

ignition means for igniting said combustible mixture, and

exhaust means for carrying exhaust gas produced by the combustion of said combustible fluid mixture away from said combustion chamber, said exhaust means including a tail pipe,

air cooled means for

removing a minor effective portion of said exhaust gas passing through said tail pipe in a normal direction of travel,

cooling said minor portion of said gas by conducting heat from the gas with air cooled solid materials and by expanding the gas, and

returning said cooled minor portion of said exhaust gas to said intake means for delivery to said combustion chamber to improve the combustion of said combustible fluid mixture and to internally clean said engine,

said air cooled means comprising,

(a) channel means integrated with said tail pipe and having an opening for receiving and diverting from said tail pipe a minor effective portion of said gas passing through said tail pipe, said opening and said channel means being positioned with respect to said tail pipe such that gas flows into said opening and said channel means while said gas continues to move in said normal direction of travel;

(b) a single substantially continuous heat conductive conduit in fluid communication with and connected at one end to said channel means, and

integrated at the other end and in fluid communication with said intake means such that a vacuum is formed in said other end of said conduit,

said conduit having an exterior surface and including

(i) a plurality of spaced heat conductive cooling fins mounted on and extending outwardly from at least a portion of said exterior surface of said conduit, said fins drawing heat from said conduit and said gas passing therethrough and transfering said heat to air contacting said fins,

(ii) a filter integrated with said conduit and comprised of a porous material, said gas diverted from said tail pipe by said channel means moving along said conduit and passing into and through said filter and back into said conduit, said filter removing particulate from said gas passing therethrough and breaking up condensed water droplets carried in said gas,

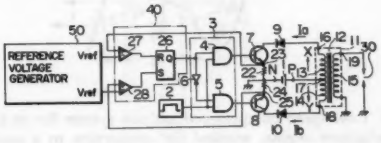
(iii) a valve integrated in said conduit, said valve being adjusted so that the vacuum in said conduit leading to said valve is less than the vacuum in said conduit leading from said valve to said intake means so that fluid traveling through said conduit expands and cools on passing through said valve into said conduit leading from said valve to said intake means.

4,356,807

IGNITION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Norihito Tokura, Okazaki; Hisasi Kawai, Toyohashi, and Seiji Morino, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 25, 1980, Ser. No. 181,243
Claims priority, application Japan, Aug. 31, 1979, 54-111846
Int. Cl.³ F02P 3/04
U.S. Cl. 123—606 5 Claims



1. An ignition arrangement for an internal combustion engine having an electrical power source, comprising:

an ignition transformer having first and second primary coils and a secondary coil;

a spark plug coupled to said secondary coil for igniting said engine in response to a voltage induced in said secondary coil by a current flowing in either of said primary coils;

a first switching element, a first diode and a first current sensing resistor connected in series with said first switching element forming a first circuit for (a) coupling power from said power source to said first primary coil when the first switching element is closed and (b) preventing a flow of power from the power source to said first primary coil when the first switching element is open;

a second switching element, a second diode and a second current sensing resistor connected in series with said second switching element forming a second circuit for (c) coupling power from said power source to said second primary coil when the second switching element is closed and (d) preventing a flow of power from the power source to said second primary coil when the second switching element is open;

means for generating a signal synchronized with the rotation of said engine; and

a control circuit having inputs coupled to said generating means and to said current sensing resistors for controlling the switching of said first and second switching elements by providing an OFF-ON repetitive signal to one of said switching elements and an ON-OFF repetitive signal to the other of said switching elements so as to operate said switching elements in push-pull, the ON and OFF intervals of the repetitive signals being controlled as a function of the current flowing in said first and second circuits and the signal provided by the generating means so that current flow in one of the circuits is shut-off when the magnitude of current flow in that circuit reaches a predetermined value and simultaneously the other circuit is switched so that current will flow therein, the alternating current flows through the first and second circuits and their respective primary coils inducing a voltage in the secondary coil.

4,356,808

LOW-SPEED COMPENSATED IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

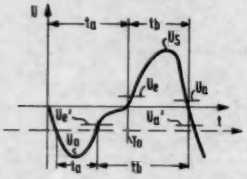
Bernd Bodig, Leinfelden, and Werner Jundt, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 2, 1981, Ser. No. 317,284

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043247

Int. Cl.³ F02P 5/04, 1/00

U.S. Cl. 123—614 6 Claims



1. Low speed compensated ignition system for an internal combustion engine, adapted for connection to a source of electrical power (1) having

an ignition coil (5, 6, 42);

a controlled switch (7, 9) serially connected with said coil and controlling current flow therethrough;

means (8) sensing current flow through the ignition coil and deriving an electromagnetic storage signal;

a control signal generator (16) operating in form of an a-c generator and providing undulating signals in synchronism with the revolutions of the engine which have a positive peak value (Us) and a negative peak value (Uo) and a zero or null or center or cross-over line upon change of polarity of the signal;

a control circuit including a threshold switch (13) connected to receive the undulating signal connected to and controlling said controlled switch (7, 9) when the undulating signal is above the zero or null or cross-over level and is increasing in a positive direction from the negative peak value (Uo) and reaches, with respect to said zero or cross-over level, a first ON threshold level (Ue) to store electromagnetic energy in the coil, and interrupting conduction of the controlled switch (7, 9) and thus initiate release of electromagnetic energy from the coil to initiate an ignition spark pulse when the undulating signal is decreasing from a positive peak value (Us) and reaches, with respect to said zero or cross-over level, a second OFF threshold level (Ua),

said control circuit being further connected to receive the electromagnetic storage signal to modify the response of the threshold switch in dependence on sensed current flow through the coil by shifting response to said threshold switch with respect to the change in polarity of the signal, and hence modifying the zero or null or cross-over level of the undulating signal as applied to the threshold switch,

and comprising

means for additionally modifying the ON threshold level with respect to the modified zero or null or cross-over level of the undulating signal under low-speed conditions to prevent excessive current flow through the coil including

circuit means (36, 37, 38, 39, 19) responsive to low-speed conditions of the engine and hence of the control signal generator connected to said threshold switch (13) for introducing to said threshold switch an additional modifying signal affecting the first ON threshold response level thereof in a direction to delay response of the threshold switch and thus shorten the duration of conduction of said controlled switch (7, 9) and hence the duration of current flow through the coil (5, 6);

wherein said control system includes

a circuit network (26) of variable conductivity connected (20, 21) to a terminal of said threshold siwtch (13);

the auxiliary capacitor (36) is connected to said terminal (inverting) of the threshold switch, said control signal generator (16) having one of its terminals connected to said terminal of the threshold switch;

and wherein the charging circuit for said auxiliary capacitor includes a serial resistor (37) diode (38) connection from said one terminal of the control signal generator (16) connection to the circuit network of variable conductivity (26);

and a coupling and calibrating resistor (39) is provided connected between the charging circuit connection and said auxiliary capacitor and said terminal of the control signal generator (16),

to interconnect said control circuit, said circuit network of variable conductivity and said auxiliary capacitor and provide for modification of the response of the threshold switch

(a) in accordance with the zero or null or cross-over of the undulating signal derived from the control signal generator, as modified by the circuit of variable conductivity, and

(b) modification of the response threshold level of said threshold switch as modified by the auxiliary voltage applied by the auxiliary capacitor (36) and derived from said control signal generator.

4,356,809

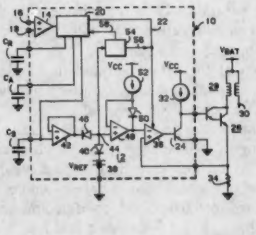
AUTOMOTIVE STALL CIRCUIT

James J. Lo Cascio, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1981, Ser. No. 269,118

Int. Cl.³ F02P 11/00

U.S. Cl. 123—632 10 Claims



1. A stall circuit to be utilized in combination with an adaptive dwell electronic ignition system operated in timed relationship to an engine, comprising:

first circuit means coupled to a first circuit node for providing a reference potential thereat; and

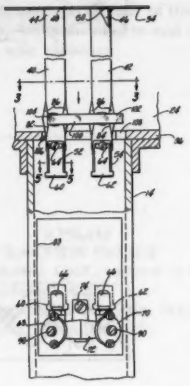
second circuit means having an input coupled with the ignition system and an output which is responsive to the magnitude of an input signal supplied thereto being greater than said reference potential for producing an output signal the magnitude of which is proportional to said reference potential, said second circuit means being responsive to said magnitude of said input signal being less than said reference potential for producing an output signal that is proportional to said magnitude of said input signal.

4,356,810

PLURAL BURNER GAS COOKER

William J. Ferlin, 2051 Twelfth St., Detroit, Mich. 48216, assignor to William J. Ferlin, Detroit, Mich.

Filed Feb. 17, 1981, Ser. No. 234,660
Int. Cl.³ A47J 37/00; F24C 3/00
U.S. Cl. 126—41 R 12 Claims



1. In a gas burner assembly having at least two burner sections and support means therefor, a corresponding number of fuel gas supply valves, a mixing tube for each valve having an upsteam end for receiving gas from the valve and a downstream end in gas delivering relation to a said burner section, said valves being mounted in a housing having an access opening, each mixing tube having a primary air opening adjacent its upstream end adjustable by a shutter, said shutters having adjustment means at like sides of said mixing tubes accessible through said access opening in assembled relation of said parts, said support means having a wall with an opening through which said mixing tubes are insertable to position said upstream ends in gas receiving relation to outlets on said valves, improved structure which comprises,

a substantially rigid member anchored to and extending between said mixing tubes,

said member forming a strut and a tie effective to retain said upstream ends in properly positioned relation to said valve outlets against thermal warpage of said parts incidental to operation of said burner sections,

said member having a portion which projects laterally of said mixing tubes to such an extent that the lateral dimension of the combined member and mixing tubes is greater than the general cross dimension of said wall opening,

said wall having a notch which opens into said wall opening and extends outwardly thereof laterally of said mixing tubes,

said wall opening and notch having a combined lateral dimension greater than that of said member and mixing tubes and said portion of said member being dimensioned to pass through said notch whereby to facilitate insertion of said mixing tubes through said wall opening when said portion is aligned with said notch,

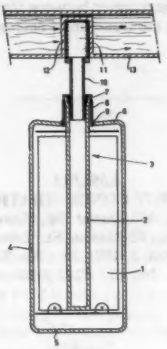
said notch being so located that when said member portion is aligned therewith said adjustment means face in the direction of said access opening to insure accessibility of said adjustment means through said access opening when said upstream ends are inserted into gas receiving relation to said valve outlets.

4,356,811

SOLAR COLLECTOR

Johan C. de Grijs, and Herman Bloem, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,371
Claims priority, application Netherlands, Jul. 3, 1979, 7905158
Int. Cl.³ F24J 3/02
U.S. Cl. 126—433 2 Claims



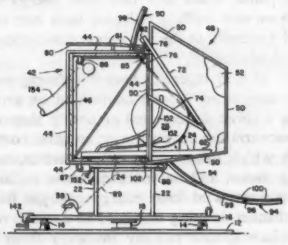
1. A solar collector, which comprises a metal heat pipe having an evaporator section and a condenser section spaced from each other, said condenser section being formed for installation in a heat transport system; a solar heat absorber plate thermally conductively connected to the evaporator section; an evacuated transparent glass envelope spaced from and surrounding the absorber plate and the evaporator section, said envelope being joined to the heat pipe at an open end of the evaporator section by means of a glass-metal seal; and the heat pipe including a flexible portion joining the open end of the evaporator section and an open end of the condenser section, said flexible portion having an outer diameter and a passage respectively smaller than an inner diameter and a passage of the evaporator section and an inner diameter and a passage of the condenser section, the moment of resistance of said flexible portion being smaller than the moment that can be withstood by the glass-metal seal.

4,356,812

DIRECTIONAL SOLAR HEATING ASSEMBLY

Robert M. Haven, 204 E. Emma, Lafayette, Colo. 80026

Filed Jan. 20, 1982, Ser. No. 340,998
Int. Cl.³ F24J 3/02
U.S. Cl. 126—438 21 Claims



1. A solar heating assembly, including a solar collector comprising:

a receiver for holding a heat transfer medium,

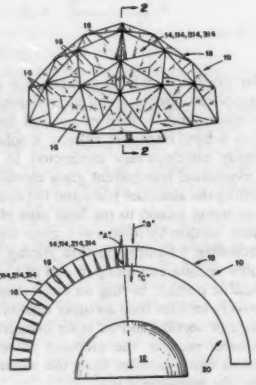
a reflector having a reflecting surface,
a transparent enclosure mounted on the solar collector on the side of the reflector having the reflecting surface,
an insulated storage compartment mounted on the solar collector, the thermally insulated compartment being in communication with the transparent enclosure,
an insulated door movable from a position permitting communication between the thermally insulated compartment and the transparent enclosure to a position thermally sealing the thermally insulated compartment, and
means for moving the receiver between the thermally insulated compartment and the transparent enclosure.

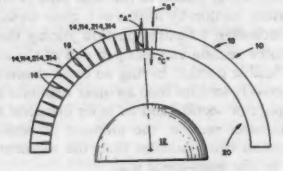
4,356,813

SOLAR ENERGY CONCENTRATION DEVICE

Thomas J. Hoffman, 873 Dorset Dr., Knoxville, Tenn. 37923, and Jose G. Martin, 85 Mansur St., Lowell, Mass. 01852

Filed Feb. 2, 1981, Ser. No. 230,526
Int. Cl.³ F24J 3/02
U.S. Cl. 126—439 **6 Claims**





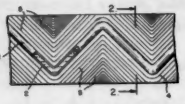
1. A solar energy concentrating device for concentrating the intensity of solar radiation impinging on a solar collector, the solar energy concentrating device comprising:
means defining a tapered truncated pyramidal-shaped channel for the passage therethrough of solar energy, said tapered channel defining means having solar energy reflecting planar walls such that solar energy which may impinge on said walls is reflected back into said tapered channel generally in the direction of the convergence of said tapered channel;
a plurality of said tapered channel defining means being linearly connected to one another in an arcuate array defining a three dimensional arcuately shaped solar energy concentrating device having an outer convex surface through which solar energy enters said tapered channel defining means and an inner concave surface through which concentrated solar energy emerges from said tapered channel defining means to be focused on a collection surface spaced radially inwardly from said inner concave surface; and,
said tapered channel defining means are oriented such that they taper in the direction from said convex outer surface toward said concave inner surface of said solar energy concentrating device.

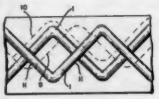
4,356,814

CURVILINEAR SOLAR ENERGY COLLECTOR

David Lee, 10992 Ashton, Los Angeles, Calif. 90024

Filed Dec. 8, 1980, Ser. No. 214,275
Int. Cl.³ F24J 3/02
U.S. Cl. 126—440 **4 Claims**





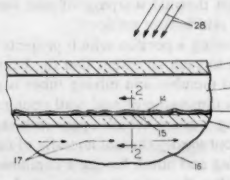
1. A solar energy collector comprising:
a. A curvilinear working fluid conduit orientated normal to the mean path of the sun;
b. A plurality of Fresnel focusing elements arrayed between the sun and the conduit, the prismatic elements of the lens being curved parallel to the conduit, whereby the sun's rays are concentrated upon the curvilinear conduit;
c. A second curvilinear conduit substantially identical to the first disposed normal to the sun, but further along the apparent path of the sun to the extent that the extreme curves of the second conduit are disposed opposite the extreme curves of the first conduit.

4,356,815

SOLAR ENERGY COLLECTOR HAVING AN ABSORBER ELEMENT OF COATED FOIL

Louis Spanoudis, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 19, 1980, Ser. No. 179,902
Int. Cl.³ F24J 3/02
U.S. Cl. 126—443 **17 Claims**

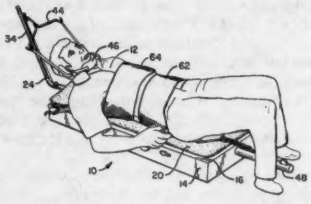


1. A solar energy collector comprising first and second spaced apart wall members said spaced walls defining therebetween a space, said space being evacuated, a coated foil between said wall members, and means forming a conduit for circulation of a heat-absorbing medium, in contact with the side of said second wall member remote from said coated foil, said coated foil having a solar selective coating on the side facing said first wall member, and an emissive coating thinner than said foil on the side facing said second wall member, said

emission coating having high emissivity in the infrared spectrum.

15. A process for forming a solar energy collector comprising applying to one side of a foil a solar selective coating and applying to the other side of the foil an emissive coating having relatively high emissivity in the infrared spectrum, and then placing the foil between a transparent wall member adapted to face solar radiation and another wall member adapted to engage a heat-absorbing medium, the side of the foil having the solar selective coating being directed to said transparent wall member facing such solar radiation.

4,356,816
TRACTION DEVICE
Elof Granberg, San Rafael, Calif., assignor to Granberg Pump and Meter Ltd., Richmond, Calif.
Filed Aug. 29, 1980, Ser. No. 182,551
Int. Cl.³ A61H 1/02
U.S. Cl. 128—71 4 Claims



1. A traction device comprising:

a portable frame having an upper surface adapted to support an individual to be subjected to traction, and a pair of rods releasably engageable with the frame proximate the opposite ends of the upper surface and providing mounting points spaced from said upper surface;

a pair of tension members emanating from the underside of the frame and having free ends passing through the respective mounting points and back toward the upper surface of the frame;

means for securing the free end of one of the tension members to the individual to be subjected to traction;

a chain having upper and lower runs parallel to the upper surface defined by spaced sprockets, one of the tension members being attachable to the upper run of the chain and the other tension member being attachable to the lower run of the chain, one of the sprockets having a transverse detent;

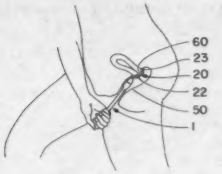
a rotatable shaft including a handle manually operable by the individual to be subjected to traction, said shaft projecting through the sprocket having the detent and having a radial projection proximate the detent;

a spring biasing the sprocket having the detent against the projection so that the detent engages the projection until the applied tension in one of the tension members reaches a preselected value, beyond which the projection becomes disengaged from the detent to prevent the applied tension from exceeding the preselected value;

means for varying the force of the spring to select the desired tension; and

a brake preventing the shaft from rotating in a direction to release the appied tension so that the preselected tension value is maintained.

4,356,817
INSERTER FOR VAGINAL PRODUCT
Gary E. McKibben, Cincinnati, and Mary Jo Helseth, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jul. 3, 1980, Ser. No. 165,540
Int. Cl.³ A61F 5/46
U.S. Cl. 128—127 5 Claims



1. An apparatus for safely and reliably inserting a resilient, substantially hemispherically-shaped, cervix-covering pessary into the human body without soiling of the operator's hands, said apparatus comprising:

(a) a substantially rigid bowl having a size and shape at least partially conforming to said pessary when said pessary is folded upon itself to facilitate insertion into the vaginal canal;

(b) a resiliently deformable diaphragm substantially conforming to and disposed within said bowl secured in sealed relation thereto about its periphery;

(c) a substantially rigid neck portion secured to the exterior of said bowl, said neck portion being oriented substantially perpendicular to the bottom of said bowl and having a length sufficient to apply said pessary to said cervix when said neck portion is inserted into the vaginal canal;

(d) a resiliently deformable handle portion secured to said substantially rigid neck portion, said resiliently deformable handle portion comprising a resiliently deformable fluid-containing chamber in fluid communication with the area intermediate said rigid bowl and the unsecured portion of said resiliently deformable diaphragm through said neck portion, said chamber containing a volume of fluid sufficient to substantially invert the unsecured portion of said diaphragm from said bowl when said resiliently deformable handle is squeezed, thereby discharging said folded pessary from said bowl in a predetermined orientation; and

(e) means on said handle to indicate the orientation of said pessary in said bowl after insertion of said bowl and said neck portion into the vaginal canal to allow the operator to properly orient said pessary relative to the cervix prior to discharging said pessary from said bowl.

4,356,818
DIAPER WITH MOISTURE DETECTING APPARATUS
Helene Macias, and Angos Winke, both of 5333 Russell Ave., Suite 301, Hollywood, Calif. 90027
Filed Dec. 3, 1979, Ser. No. 99,641
Int. Cl.³ A61B 19/00; A61F 13/16
U.S. Cl. 128—138 A 137 Claims

1. In an absorbent wadding substantially dimensioned as a disposable diaper encapsulated between a moisture impervious backing sheet having an open surface and a non-absorbing moisture permeable inner sheet,

the improvement of electrically sensing when said adsorbent wadding requires the disposal of a soiled diaper

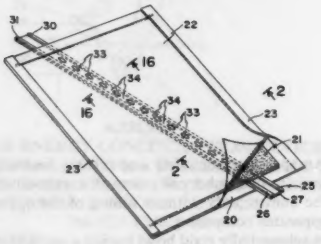
a. by providing said backing sheet one or more dimple depressing means to adjoin said securing means with said inner sheet and with said backing sheet within a median location respective the edges of said absorbent wadding,

b. said dimple means defining flow paths to portions of said absorbent wadding not adjoined with said dimple means,

c. said dimple means defining a first and a second longitudinal conduit of circuitry at the common touching comprising said absorbent wadding with backing sheet portions of said backing sheet not similarly adjoined with said dimple means,

d. by providing a second conductor removed from a first conductor,

e. said first and said second conductor arranged to extend across and affixed by securing means to the surface of said backing sheet facing said inner sheet characterized by



f. a portion of said first conductor being common to said touching comprising said first longitudinal conduit of circuitry, and

g. a portion of said second conductor being common to said touching comprising said second longitudinal conduit of circuitry

thereby normally providing electrical isolation between said first and said second conductor and prevent contact between them when the diaper is folded or wrinkled, but allowing an electrical short circuit in the presence of electrically conductive digested fluid draining into said absorbent wadding.

4,356,819

ARTICLE OF MANUFACTURE HAVING ADHESIVE PROPERTIES

Jan J. Potaczek, Leicester, England, assignor to Advance Tapes (U.K) Limited, Leicester, England

Filed Mar. 20, 1980, Ser. No. 132,071

Claims priority, application United Kingdom, Mar. 21, 1979, 7909956

Int. Cl.³ A61F 5/44; A61L 15/06

U.S. Cl. 128—156 **17 Claims**

1. An article of manufacture, having adhesive properties, and comprising a plastics matrix in which is dispersed a gelatinous adhesive composition present in quantities between about 30% and 50% by weight of the dispersion, said gelatinous adhesive composition comprising the product resulting from heating together in the absence of solvent:

(a) at least one polyhydric alcohol, and

(b) at least one material selected from the group consisting of gelatin, naturally occurring high molecular weight polysaccharide gums, and resins which are a copolymer of a vinyl ether and a second component selected from organic acid anhydrides and their corresponding free acids, to promote chemical reaction between components (a) and (b) and to drive off water produced in the reaction, the reaction being carried substantially to completion.

14. An article according to claim 1, when moulded to form a component of a surgical appliance or the like.

4,356,820

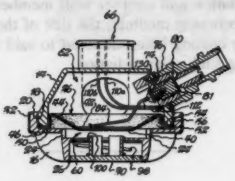
HEAT RECLAIMER FOR DEMAND REGULATOR

Joseph C. Trinkwalder, Jr., North Tonawanda, N.Y., assignor to Sherwood-Selpac Corporation, Lockport, N.Y.

Filed Aug. 18, 1980, Ser. No. 178,690

Int. Cl.³ A62B 7/04

U.S. Cl. 128—204.26 **10 Claims**



1. In a pressure regulator for use in breathing apparatus wherein said regulator includes a housing, a diaphragm within said housing dividing the housing interior into a first chamber open to ambient and a second chamber, a breathing passage leading from said second chamber and adapted to be in communication with the mouth of the user for breathing therethrough, exhalation valve means operatively associated with said second chamber for exhausting from said second chamber gas exhaled by the user, a supply passage leading to said second chamber and adapted for connection to a source of pressurized gas and a valve mechanism for controlling the supply of pressurized gas to said second chamber comprising a valve in said supply passage having an outlet port leading into said second chamber and a valve actuator connected to said valve and operatively associated with said diaphragm for operating said valve in response to changes in the pressure differential between said first and second chambers, the improvement comprising:

a heat conducting element in said second chamber having a first portion so located to receive heat from the user's breath and having a second portion connected in heat transferring relation to said valve mechanism whereby heat is transferred from the user's breath to said valve for preventing freeze-up of said valve mechanism under cold ambient conditions, said second portion of said heat conducting element having sufficient surface contact with said valve mechanism to transfer heat to said valve in an amount sufficient for preventing said freeze-up, said second portion of said heat conducting element contacting said valve mechanism at a location spaced from said valve outlet port a sufficient distance so as not to influence the flow of pressurized gas from said valve outlet port to said breathing passage and said outlet port of said valve being oriented with respect to said heat conducting element so as to direct the flow of pressurized gas away from said heat conducting element.

4,356,821

AIRWAY

Bruce Rind, 706 NE. 8th Ave., Aberdeen, S. Dak. 57401

Filed Sep. 17, 1980, Ser. No. 188,172

Int. Cl.³ A61M 16/00, 29/00

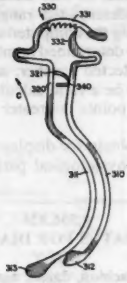
U.S. Cl. 128—207.14 **16 Claims**

1. An expandable oral airway for insertion into the throat of a patient comprising:

two elongated airway forming members each having a curved one-end portion adapted to fit the contours of the mouth and pharynx of a throat of a patient for effecting insertion and removal of the one end portion of both into and out of the throat of a user;

means connecting the two members for pivotal movement in response to a force applied at the other end portions of the members from a contracted state to at least one expanded state, wherein the one end portions are spaced apart relative to the contracted state; and

holding means disposed on the other end portion of one of said members for releasably holding the other of said members such that the members are maintained in said at least one expanded state and wherein said holding means



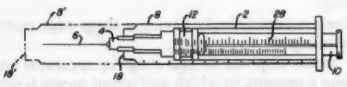
is responsive to a force applied substantially in the direction of removal of the device from the throat to release the other of said members for free movement back to the contracted state.

4,356,822

SYRINGE ASSEMBLY

Deborah Winstead-Hall, 6747 Townbrook Dr., Apt. D, Baltimore, Md. 21207

Filed Oct. 17, 1980, Ser. No. 198,056
Int. Cl.³ A61M 5/00
U.S. Cl. 128—215 12 Claims



1. A syringe assembly comprising

a hollow barrel,

needle means fixedly secured to and in communication with said barrel and having a free end of discharge of material therefrom,

plunger means received within said hollow barrel,

said plunger means being movable manually to discharge material from said needle means,

cap means for receiving at least a portion of said barrel,

locking means for securing said barrel and said cap means in one of a number of relative axial positions, while permitting relative movement of said plunger means with respect to said barrel and said cap means,

said locking means permitting a locked position of said cap means and said barrel means in a plurality of positions permitting needle shielding by said cap means and different needle exposure beyond said cap means first end, whereby depth of needle penetration may be controlled,

said locking means includes cooperating means formed on said barrel and on said cap means, and

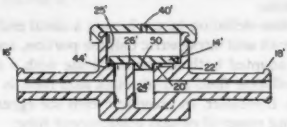
said needle means free end having a predetermined position with respect to said cap means for each said locked relative axial position of said barrel and said cap means, whereby said free end may be shielded by said cap means or project a predetermined distance therebeyond depending upon said locked relative axial positions of said cap means and said barrel and independent of the relative position of said plunger means.

4,356,823

SUCTION CONTROL

Richard R. Jackson, Eight Trinity Rd., Marblehead, Mass. 01945

Filed May 30, 1980, Ser. No. 154,812
Int. Cl.³ A61M 1/00
U.S. Cl. 128—276 8 Claims



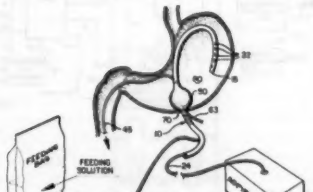
1. In a medical suction control unit comprising a housing, a suction connection to a source of vacuum and an intake connection through which fluid is to be evacuated by the unit, the unit having a movable valving element exposed to a control chamber, means establishing a vacuum bleed passage between the suction side of the instrument and said control chamber and an occludable control port permitting entry of atmospheric pressure to said control chamber when the port is open and preventing entry of atmospheric pressure when the control port is occluded, the improvement wherein said valving element comprises a relatively thick free-floating, shape retentive valving element resistant to bodily deformation under vacuum disposed within the control chamber and free to move in bodily reciprocating motion between open and closed positions in response to varying pressure determined by the closing and opening of said control port, in closed position a surface portion of said valve element resting in contact upon a corresponding surface of the interior of said housing, said vacuum bleed passage defined by a channel formed in at least one of the contacting surfaces of said valve element and said housing, said vacuum bleed passage enabling air to be withdrawn from said control chamber around the side of said valving element.

4,356,824

MULTIPLE LUMEN GASTROSTOMY TUBE

Richard M. Vazquez, 716 W. Hutchinson St., Chicago, Ill. 60613

Filed Jul. 30, 1980, Ser. No. 173,747
Int. Cl.³ A61M 25/00
U.S. Cl. 128—350 R 3 Claims



1. A multiple lumen elastomeric gastrostomy tube, said tube having a distal end portion adapted to be surgically inserted into a patient's stomach, a proximal end portion adapted to remain outside the patient's body, and an intragastric balloon portion for retaining said tube in the patient's stomach;

a first longitudinally-extending decompression lumen in said gastrostomy tube, said decompression lumen having an open, proximal end-portion adapted to be connected to a suction means, a closed distal leading end portion, and a plurality of communicating aspiration apertures along said tube distal end portion, whereby the fluid contents of the

stomach may be evacuated through said decompression lumen in response to suction;

a second elongated venting lumen in said gastrostomy tube, said venting lumen having an external opening on said gastrostomy tube proximal end-portion, and an intragastric opening on said tube distal end-portion, said venting lumen adapted to allow atmospheric air to flow into the stomach in response to pressure differentials resulting from suction;

a third inflation-deflation lumen having a distal end communicating with said intragastric balloon portion, and a proximal end adapted both to communicate with a source of balloon inflation fluid and to retain said fluid in said balloon, and, thereafter, to provide means for egress of said fluid during removal of said gastrostomy tube;

a fourth substantially elongated feeding lumen in said gastrostomy tube, said feeding lumen having inlet and outlet openings positioned at proximal and distal portions, respectively, of said gastrostomy tube, said feeding lumen constructed to receive an intraduodenal feeding tube inserted therethrough; and

annular elastomeric sleeve means affixed to said gastrostomy tube, in trailing relationship to said intragastric balloon portion, said annular elastomeric sleeve means adapted to contact the abdominal walls where said gastrostomy tube is surgically inserted, and said sleeve constructed of material which induces the formation by the patient's body of a protective fibrotic sheath in the area of said contact.

4,356,825

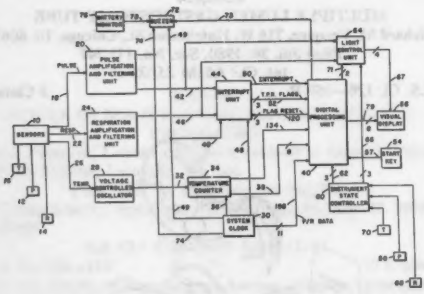
METHOD AND SYSTEM FOR MEASURING RATE OF OCCURRENCE OF A PHYSIOLOGICAL PARAMETER

George J. Veth, Fairfield, Colo., assignor to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 935,642, Aug. 21, 1978, which is a continuation of Ser. No. 769,887, Feb. 18, 1977, abandoned. This application Mar. 11, 1980, Ser. No. 129,213

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—630 **14 Claims**



1. A method for measuring a physiological parameter of a patient in a rapid manner by converting successive measurements of the physiological parameter into a final measurement value thereof, comprising the steps of:

(a) detecting successive occurrences of the physiological parameter;

(b) producing, in response to said successive occurrences of said physiological parameter, data points representing values of said physiological parameter;

(c) comparing each of said data points with a predetermined range to determine those data points having a value falling within said predetermined range, and determining the number of said data points having a value falling within said predetermined range;

(d) computing an average of all said data points having a value falling within said predetermined range;

(e) determining if said computed average falls outside of said predetermined tolerance limits, and if so, substituting said computed average as a new average; and

(f) determining if said computed average falls within said predetermined tolerance limits, and if so, comparing the determined number of said data points having a value within said predetermined range with a pre-selected number, declaring the computed average to be an invalid calculation if the determined number of date points is less than said pre-selected number, and declaring the computed average to be a valid calculation if the determined number of date points is greater than said pre-selected number;

whereby to rapidly obtain for display a valid final measurement value of the physiological parameter from said date points.

4,356,826

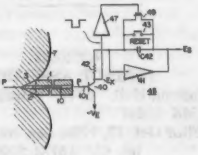
STABBING APPARATUS FOR DIAGNOSIS OF LIVING BODY

Tetsumaru Kubota, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 37,352, May 9, 1979, Pat. No. 4,299,230. This application Apr. 27, 1981, Ser. No. 257,788

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—630 **5 Claims**



1. A stabbing apparatus for penetration of a living body comprising:

a stabbing apparatus body having a sharp edge portion for penetrating the living body;

sensor means disposed in said stabbing apparatus body for sensing a pressure to which said sensor means is subjected during penetration of a living body wall, and providing a pressure signal corresponding to said pressure;

accumulator means coupled to said sensor means for accumulating information corresponding to the signal level of said pressure signal to provide an accumulated signal which corresponds to the depth of said penetration; and

indicator means coupled to said accumulator means for indicating said penetration depth according to the magnitude of said accumulated signal.

4,356,827

METHOD OF ARRHYTHMIA DETECTION WITH DETECTING MECHANISM

Masahiro Uemura, Kasugai; Chikao Harada, Aichi; Kenichi Sakurado, Mizunami, and Tsunehito Kakamu, Gifu, all of Japan, assignors to Nippon Collin Co., Ltd., Komaki, Japan

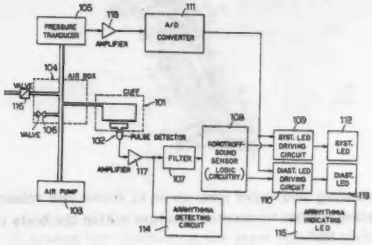
Division of Ser. No. 963,966, Nov. 27, 1978, Pat. No. 4,262,674. This application Sep. 16, 1980, Ser. No. 187,723

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—680 **11 Claims**

1. A method of arrhythmia detection using a sphygomanometer with an arrhythmia detecting mechanism, wherein diagnosis of arrhythmia is done simultaneously with the blood pressure measurement, comprising the steps of detecting arrythmia by comparing the ratio of two consecutive physiological pulse interval times with a predetermined allowable range value, determining an arrythmia if said ratio value is out of said allowable range, setting said two consecutive pulse interval times as one duration time T_1 from a base point of a said pulse appearing or disappearing to the next similar base point of a said pulse

appearing or disappearing, taking a succeeding duration of time T_2 in the identical way between each two similar base points, said arrhythmia detecting method being characterized by the steps of simultaneous derivation of arrythmia system input from the Korotkoff or physiological pulse pressure waveforms of the sphygomamanometric portion of the system, electrically forming a first pulse from said physiological pulse detecting; calculating two time values (T_1-t_1) and (T_2-t_1) by

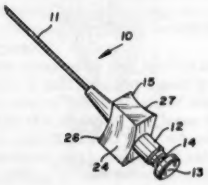


deducting from one pulse interval T_1 and the next pulse interval T_2 respectively the pulse interval t_1 of said first pulse, said time values being made the objects of the pulse interval comparison; completing said comparison within the pulse duration time of a second pulse triggered at every second rising of said first pulse width t_1, and clearing the memory of pulse interval comparison within the time duration (t_1-t_2), i.e., from the rising of said second pulse to the falling of said first pulse.

4,356,828
BONE MARROW ASPIRATION NEEDLE

Khosrow Jamshidi, 610 Winston Ct., St. Paul, Minn. 55118

Filed Mar. 3, 1980, Ser. No. 126,648
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—754 1 Claim



1. In combination with a bone marrow biopsy sampling device including a hollow needle, a stylet arranged to be removably disposed within the bore of said hollow needle and generally coextensive therewith, and with a sharpened cutting edge at the distal end of said hollow needle; gripping means disposed about the proximal end of said hollow needle and comprising:

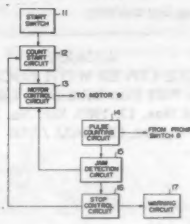
(a) a generally solid finger-gripping member secured to said needle adjacent the proximal end thereof and being fast thereon, and with portions of said finger-gripping member extending laterally of said needle and having a needle-receiving bore formed generally along a first axis thereof and extending through said solid finger-gripping member,

(b) said gripping means being of generally rectangular configuration having four faces aligned with the direction of said needle, the faces of a first opposite pair being generally plane and mutually parallel, and the faces of a second opposite pair intersecting the faces of said first pair and having grooves defined by concave cylinders, the base axes of one cylinder being parallel to the direction of said needle and the base axes of the other cylinder being orthogonal to said direction.

4,356,829
ANTI-JAMMING MEANS FOR COIN COUNTING MACHINES

Katusuke Furuya, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1977, Ser. No. 862,839
Claims priority, application Japan, Dec. 29, 1976, 51-158390
Int. Cl.³ G07D *9/00*
U.S. Cl. 133—8 R 5 Claims

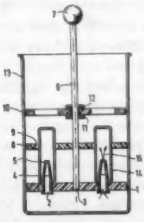


1. Coin counting machine comprising a rotatable disc disposed in a peripheral wall having an outlet, a motor for driving said disc, a coin passageway provided contiguous with said outlet in the peripheral wall and including a coin feeding member for driving coins along the passageway, means for driving the coin feeding member, means for counting the number of coins which have passed through the passageway, means for sensing coin jamming, and means for operating the motor and the means for driving in one direction under normal operation and reversing the direction of operation of at least the drive means when coin jamming has been sensed.

4,356,830
CLEANSING APPARATUS FOR TEST-VESSELS

Christian Holzapfel, Julich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich GmbH, Julich, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 214,974
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950074
Int. Cl.³ B08B *3/02, 9/08*
U.S. Cl. 134—152 10 Claims



1. A cleansing apparatus for cuvettes comprising:

a support shaft,

first and second parallel disks secured perpendicularly to said shaft and spaced apart along said shaft a distance slightly less than the length of a cuvette to be cleansed,

nozzle means mounted on and extending through said first disk and directed toward said second disk,

said second disk having first aperture means therein aligned with said nozzle means so that a cuvette may be inserted through said first aperture means and over said nozzle means and the cuvette is retained against lateral displacement by said second disk,

a third disk rotatably mounted on said shaft and having second aperture means therein capable of being aligned or misaligned with respect to said first aperture means by rotation of said third disk on said shaft,

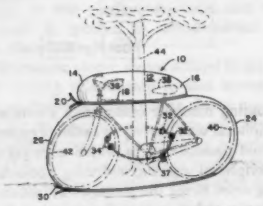
whereby a cuvette may be inserted through aligned first and second aperture means and over said nozzle means and retained by slight rotation of said third disk so that said first and second aperture means are misaligned and whereby immersion of said apparatus into a cleansing solution forces a jet of solution through said nozzle means for cleansing the cuvette.

4,356,831

BICYCLE COVER WITH LOCK HOLES

Laura A. Adams, 7101 East Kilmer St., Landover, Md. 20785

Filed Nov. 12, 1980, Ser. No. 205,983
Int. Cl.³ B62J *17/08*
U.S. Cl. 135—7 **6 Claims**



1. A non rigid, protective covering for a bicycle or similar wheeled vehicle having a frame, a front wheel rotatably mounted thereon, at least one rear wheel rotatably mounted thereon, a seat mounted on the upper portion of the frame and handle bars mounted on the frame and operably coupled to the front wheel, said covering comprising:

an upper portion adapted to cover the upper portion of the vehicle including the handle bars and seat, said upper portion being substantially pear-shaped in longitudinal cross section with a maximum horizontal thickness in a front portion for receiving the handle bars and a minimum horizontal thickness in a rear portion for receiving the seat, front, said and rear panels integrally depending from said upper portion with adjacent vertical edges thereof joined to form a continuous covering for the vehicle; first drawstring means carried by said covering and surrounding the juncture between said upper portion and said side panels for drawing said covering about the seat and handle bars of the vehicle when the vehicle is covered by said covering; second drawstrings carried by said panels at the edge thereof opposite the juncture with said upper portion for drawing said panels about the wheels of the vehicle when the vehicle is covered by said covering so that said covering will cover substantially all of the vehicle; and means carried by said covering for receiving a lock whereby said covering may be locked to the vehicle and the vehicle and cover locked to an external immovable object.

4,356,832

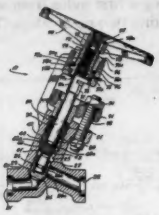
HIGH PRESSURE BONNETLESS VALVE

Adolf K. Velan, Westmount, Canada, assignor to Velan Engineering Ltd., Montreal, Canada

Filed Apr. 13, 1981, Ser. No. 253,381
Int. Cl.³ F16K *43/00, 41/02*
U.S. Cl. 137—15 **16 Claims**

15. A method of removing from a valve, a backseat and packing means, without the necessity of first removing the packing means from the body of the valve so as to provide access for removal of the backseat, said method comprising the steps of:

(a) providing a valve stem for said valve and cooperatively interlockingly engaging said valve stem with the backseat for purpose of removing the same from the valve;



(b) rotating said valve stem so as to rotate and release the backseat from its secured position within the body of the valve; and

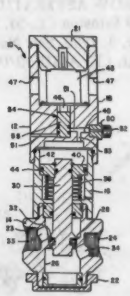
(c) further manipulating said valve stem to withdraw the backseat and the packing means from the valve body.

4,356,833

TEMPERATURE CONTROLLED VALVE MECHANISM AND METHOD

John M. Mayfield, Jr., Ukiah, and Vernon Haselswerdt, Willits, both of Calif., assignors to Microphor, Inc., Willits, Calif.

Filed Sep. 10, 1979, Ser. No. 73,941
Int. Cl.³ G05D *23/275;* F16K *31/122*
U.S. Cl. 137—62 **50 Claims**



1. A temperature controlled valve mechanism transportable as a single unit comprising:

a single valve housing;

a valve inlet in the housing for connection to a fluid source;

a valve outlet in the housing for draining fluid from the housing;

a valve closure member supported in the housing for movement between closed and open positions, the valve closure member blocking and closing the valve outlet when in its closed position;

biasing means in the housing for urging the valve closure member away from its closed position;

means forming an expansion chamber in the housing, including means for moving the closure member to its closed position against the force of the biasing means upon entry of a pressurized medium into the expansion chamber; and

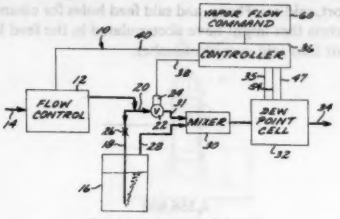
temperature activated venting means including a temperature responsive actuator in the housing for venting and depressurizing the expansion chamber upon occurrence of a temperature drop to a predetermined ter ,erature, such venting of the expansion chamber caus ag the biasing means to rapidly move the valve closure member from its closed position whereby the valve mechanism is opened.

4,356,834

VAPOR FEED REGULATOR

Dan B. LeMay, 1736 Addison Rd., Palos Verdes Estates, Calif. 90724

Filed Nov. 2, 1979, Ser. No. 90,566
Int. Cl.³ G05D 11/10
U.S. Cl. 137—89 7 Claims



1. A system for controlling the mass ratio of species in a flowing binary mixture of a vapor and a carrier gas, said system comprising:

first carrier gas means operative to provide a first flow of carrier gas;

vaporizer means coupled to said first carrier gas means for introducing a vapor into said first flow of carrier gas to provide fluid mixtures which are characterized by different mass ratios of vapor to carrier gas;

second carrier gas means bypassing said vaporizer means and operative to provide a controlled second flow of carrier gas;

conduit means for combining said second flow of carrier gas with said first flow of carrier gas and said vapor introduced into said first flow of carrier gas to provide a combined flow;

detector means responsive to incipiency of vapor phase change, said detection means being coupled to said conduit means and adapted to sample said combined flow to provide a detector signal varying in accordance with deviation of the condition of said combined flow from said point of incipiency;

controller means coupled to said second carrier gas means and responsive to said detector signal to generate a control signal to control the flow rate of said second flow of carrier gas thereby to adjust the mass ratio of vapor to carrier gas in said combined flow whereby said detector signal is maintained at a commanded value; and

means for controlling the temperature within said detector means whereby said point of incipiency is made to correlate with the mass ratio of vapor to carrier gas in correspondence with said commanded value.

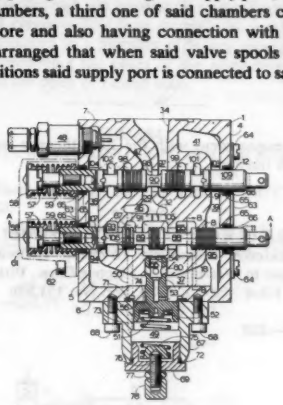
4,356,835

HYDRAULIC CONTROL VALVE FOR SELECTIVELY SUPPLYING FLUID TO HYDRAULIC SERVICES

William S. Turnbull, Wolverhampton, and Gary W. Pugh, Dunston, both of England, assignors to Kontak Manufacturing Company Limited, Grantham, England

Filed Apr. 11, 1980, Ser. No. 139,295
Claims priority, application United Kingdom, Apr. 12, 1979, 7912914
Int. Cl.³ F15B 18/00
U.S. Cl. 137—117 4 Claims

1. A hydraulic control valve comprising: a body having a plurality of faces including at least one pair of opposed faces and adjacent first and second bores extending between said opposed faces; each of said bores having a plurality of chambers spaced longitudinally thereof and communicating therewith; a landed valve spool in each of said bores slidable between a neutral position and at least one effective position in which selected communication is provided between adjacent chambers along said bore; a fluid pressure supply port in one of said faces which communicates with said first bore by way of first and second of said chambers spaced longitudinally of said first bore, whereby the increased flow area provided by said two chambers reduces the pressure drop occassioned by flow through them; a check valve disposed between said supply port and one of said two chambers adapted to control admission of pressure fluid from said supply port to that said one chamber and to prevent reverse flow from that said one chamber to said supply port; a tank port in one of said faces; tank passages connecting certain of said chambers to said tank port; fluid supply passages connecting said supply port, said first and second chambers, a third one of said chambers connected to said first bore and also having connection with said second bore and arranged that when said valve spools are in their neutral positions said supply port is connected to said tank port



through said fluid supply passages said first, second and third chambers, and said tank passages; service ports connected to others of said chambers and connectable to said fluid supply and tank passages when said valve spools are in said effective positions, said valve spool in said first bore when in said effective position selectively connecting that one of the first and second chambers between which and said supply port said check valve is disposed with one of said service ports by way of said first bore; restrictor means in one said fluid supply passage downstream of said first bore, and valve means having a fluid pressure responsive member and being in communication with one said fluid supply passage and with one said tank passage and being constructed and arranged to respond to a pre-determined pressure drop across said restrictor means to cause a portion of fluid in said supply passage to spill to said tank port when said first spool is in said neutral position.

4,356,836

TUBELESS TIRE VALVE STEM AND COVER

Clayton P. Wenger, 4541 SE. 27th St., and Clifford A. Reeves, 3925 SE. 32nd St. Pl., both of Topeka, Kans. 66605

Filed Aug. 4, 1980, Ser. No. 175,028
Int. Cl.³ F16K 19/20
U.S. Cl. 137—232 2 Claims

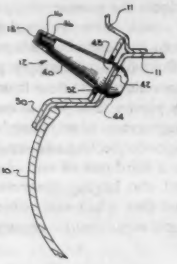
1. A tubeless tire valve stem and cover including:

a rubber valve stem with a threaded metal outer end, the inner end of the stem having an enlarged portion with a circumferential groove therein for sealing against the opening in the wheel rim;

the improvement comprising a rigid valve stem cover having a frustro conical shape with an open bottom edge and a closed top;

thread means inside the cover, located at the top thereof for receipt of the threaded end of the valve stem, the cover having a height dimensioned so that as the thread means

engage the threads of the stem, the bottom edge of the cover is forced against the enlarged portion of the stem in



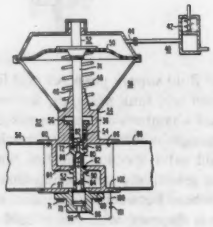
sealing engagement with the stem thereby providing rigidity to the stem.

4,356,837

SELF-CLEANING ORIFICE ASSEMBLY

John D. Dickinson, Springfield Township, Delaware County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 21, 1980, Ser. No. 151,859
Int. Cl.³ B08B *3/04*
U.S. Cl. 137—238 **11 Claims**



1. A valve comprising:

(A) a valve casing including a spring housing and a valve body, said valve body having an inlet chamber, and an escape chamber, said chambers connected by an opening defined by an inner wall structure, said structure having a top seat about the top edge of the structure closest to the opening, and a bottom seat about the bottom edge of said structure closest to the opening;

(B) a two-position valve stem, extending from the spring housing and into the valve body, having a rod with a central axially-directed bore at its bottom portion, an orifice axially-aligned with said bore and disposed at said bore's top end, a plurality of radially-directed ducts, and two valve discs that protrude radially-outward from the rod and are disposed in axially-spaced relation; said ducts including at least two feed holes, at least one escape hole, and at least one cleaning port; said top disc having a seat along its lower edge and being disposed along said rod between said feed holes and said escape hole; and said bottom disc having a seat along its top edge and being disposed along said rod between said feed holes and said cleaning port; and

(C) means for actuating said valve to move said valve stem from one of its positions to another;

whereby in said first position of said stem, said top disc's seat contacts said structure's top seat, and a fluid introduced into said inlet chamber for cleaning any debris that might have accumulated in the feed holes flows through said feed holes, said axial bore, said orifice, and then said escape hole to exit through said escape chamber; and

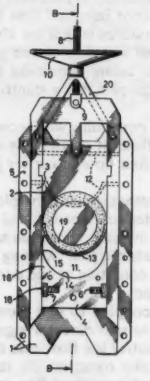
whereby in said second position of said stem, said bottom disc's seat contacts said structure's bottom seat and said escape hole being received in an annular bushing in the valve body to substantially block the fluid from the inlet chamber via said escape hole, and the fluid introduced into said inlet chamber flows through said cleaning port, said axial bore, and said feed holes for cleaning any debris that might have accumulated in the feed holes to exit into said escape chamber.

4,356,838

GUILLOTINE VALVE

Aldo Morello, Villeurbanne, France, assignor to Etablissements Trouvay & Cauvin, Le Havre, France

Filed Oct. 16, 1980, Ser. No. 197,730
Int. Cl.³ F16K *3/02, 3/314*
U.S. Cl. 137—242 **11 Claims**



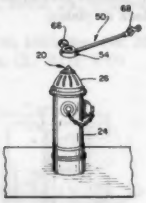
1. Guillotine valve comprising two fixed side walls forming a body of the valve and defining a space, a plate slidable movable in translation in said space between the two side walls, the plate having a transversely extending leading active edge, an aperture in each side wall which aperture is capable of being selectively closed and opened by the plate, the plate having lateral edge portions, two elongated extension portions extending the lateral edge portions of the plate beyond said leading edge, slideways rigid with the side walls and defining longitudinal cavities in which cavities the lateral edge portions and the extension portions of the plate are slidably and guidedly engaged, the edge portions and the extension portions of the plate permanently filling said longitudinal cavities irrespective of the position of the plate and thereby preventing product which passes through the valve from penetrating and accumulating in the cavities of the slideways, said leading edge of the plate extending from one of said extension portions to the other of said extension portions and having a contour which is complementary to the contour of a part of said apertures which part faces said leading edge and extends from one of said extension portions to the other of said extension portions, and means filling said space between said side walls in the region of said parts of said apertures and being flush with said parts of said apertures so that there is no groove defined between said filling means and said parts of said apertures.

4,356,839

TAMPER RESISTANT VALVE ACTUATOR FOR FIRE HYDRANT

Anthony Voynovich, 34-15 34th St., Astoria, N.Y. 11106

Filed Sep. 14, 1981, Ser. No. 301,461
Int. Cl.[3] F16K *35/06*; E03B *9/06*
U.S. Cl. 137—296 14 Claims



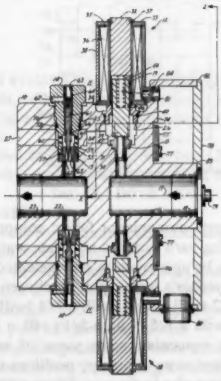
1. In a fire hydrant assembly including a hydrant standpipe, a vertically oriented valve stem positioned within said standpipe, said valve stem being rotatable for displacing a valve member and a bonnet enclosing said standpipe and valve stem, wherein the improvement comprises tamper resistant valve actuating means for selectively rotating the valve stem, said actuating means including a body portion extending below said bonnet, coupling means provided in said body portion for engagement with the valve stem and further including a non-grippable conical surface portion projecting through said bonnet, said conical surface defining a bullet shaped nose having a plurality of recesses therein being adapted for cooperative interaction with wrench means for operating said actuating means.

4,356,840

DIGITAL FLUID FLOW CONTROL SYSTEM

Harry Friedland, Salt Lake City, Utah, and Addison W. Langill, Jr., Balboa, Calif., assignors to Powell Industries, Inc., Houston, Tex.

Continuation of Ser. No. 689,071, May 24, 1976, Pat. No. 4,244,396, which is a continuation of Ser. No. 432,153, Jan. 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 169,930, Aug. 9, 1971, Pat. No. 3,785,389, which is a continuation-in-part of Ser. No. 142,681, May 12, 1971, abandoned. This application Oct. 2, 1980, Ser. No. 193,035
Int. Cl.[3] G05D *7/06*
U.S. Cl. 137—487.5 29 Claims



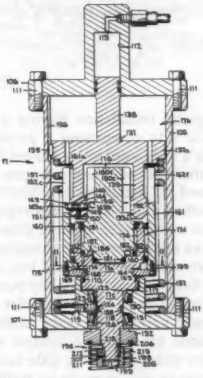
1. A digital fluid flow control system comprising:
an upstream fluid manifold;
a downstream fluid manifold;
a plurality of individually actuatable digital valve elements each having a fluid flow passage interconnecting the upstream manifold to the downstream manifold, a stationary cage formed in the flow passage, the cage having a perforated side connecting the interior of the cage with one of the manifolds and an open end connecting the interior of the cage with the other manifold, a converging-diverging nozzle located in the flow passage at the open end of the cage, and a bistable plug in the passage positionable exclusive in an open state in which the plug permits fluid flow through the passage or a closed state in which the plug prevents fluid flow through the passage; and
means responsive to a plurality of binary signals for selectively positioning the plugs of the respective valve elements in the open or closed state.

4,356,841

MATRIX SWITCHING CONTROL OF SUBSEA PRODUCTION SYSTEMS

Lionel J. Milberger, Spring, Tex., assignor to FMC Corporation, Chicago, Ill.

Filed Dec. 7, 1979, Ser. No. 101,993
Claims priority, application United Kingdom, Jul. 21, 1979, 7925529
Int. Cl.[3] F17D *3/00*; F15B *21/02*
U.S. Cl. 137—624.18 7 Claims



1. Apparatus for remote control of a relatively large number of hydraulically-operated subsea operators using only two hydraulic lines between a surface control center and a subsea device containing said operators, said apparatus comprising:
a valve actuator having an axially movable input member and a rotatable output member, said output member being rotatable to a plurality of distinct operating positions;
means for moving said actuator output member in a first rotational direction in response to an axial movement of said input member, said output member stopping at at least two of said distinct positions;
means for moving said actuator output member in a second rotational direction in response to an axial movement of said input member, said output member stopping at at least two of said distinct positions;
means for automatically reversing the direction of rotation of said actuator output member when said actuator output member has moved through a predetermined number of said distinct positions;
means for incrementing said actuator output member by one position by applying hydraulic pressure to said actuator input member;
a plurality of valve means each having an input and an output;

means for coupling each of said valve means to said actuator output member; and

position indicator means to indicate the position of said actuator output member.

4,356,842

CONTROL VALVE SET FOR A COMPLETELY PNEUMATICAL LOW- AND OPERATION PRESSURE CONTROL

Willy Gassert, Solothurn, Switzerland, assignor to Ernst Wirz, Gruningen, Switzerland, a part interest

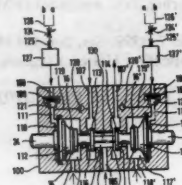
PCT No. PCT/CH79/00098, § 371 Date Mar. 10, 1980, § 102(e) Date Mar. 10, 1980, PCT Pub. No. WO80/00269, PCT Pub. Date Feb. 21, 1980

PCT Filed Jul. 10, 1979, Ser. No. 195,605

Claims priority, application Switzerland, Jul. 10, 1978, 7635/78

Int. Cl.³ F15B *13/042*

U.S. Cl. 137—625.6 **2 Claims**



1. In a pneumatic installation having a low pressure and working pressure side comprising a pneumatically operated control valve for a fully-pneumatic system for controlling both the low pressure and working pressure sides thereof and adapted to be used for signalling purposes, time-controlling or sequence-controlling pneumatic or hydropneumatic machines, the improvement comprising: a valve slide located in a valve housing having an inlet passage for compressed air, at least one vent passage, two outlet passages, and two control input ports, said valve slide being provided for the purpose of alternately connecting the outlet passages to the inlet passage and to the vent passage; said valve slide being shiftable between two switching positions by applying control system pressure to ends of said valve slide, said valve slide being held in said two positions against axial displacement by resilient detent devices; a normally open valve located in each of the control input ports and controlling the associated input port in a pressure-dependent manner and which closes when the difference of the pressures prevailing upstream and downstream of the particular valve exceeds a predetermined value; a check valve venting the portion of each control input port between the valve and the valve slide; and said check valve of the control input port to which pressure must be applied in order to switch the valve slide being connected to the outlet passage which carries pressure prior to the switching-over operation, and said check valve of the other control input port being connected to the other outlet passage.

4,356,843

LAMELLATE FLUID RESISTANCE DEVICE

Hans D. Baumann, 32 Pine St., Rye, N.H. 03870

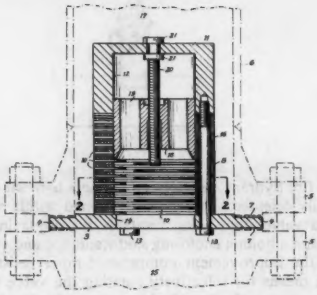
Filed Jan. 12, 1982, Ser. No. 338,911

Int. Cl.³ F16K *47/08*

U.S. Cl. 138—43 **5 Claims**

1. Lamellate fluid resistance device comprising:

a. a stack of flat ring-shaped plates, having inner and outer diameters, each plate being subdivided into a number of even segments, each segment containing at least one perforation, extending along a circle located approximately midway between each plate's inner and outer diameter, one of said segments having a wedge-shaped opening of a width several times the plate thickness and extending radially between the plates' inner and outer diameters, all stack plates being angularly displaced with respect to each other by an angular distance of at least one of said segments so that the wedge-shaped opening of one plate can overlap the closed segment of the next plate, defining thereby a fluid passage between the inner and outer diameter of said stack of plates;



b. means to support said stack of plates having a central opening in close proximity to the inside diameter of said plates, and having an external diameter extending beyond the outside diameter of said stack of plates;

c. means to close off the upper terminating plate of said stack;

d. a number of fastening devices interconnecting the means to support the stack of plates, each individual plate by means of said perforations, and said means to close off the upper terminating part.

4,356,844

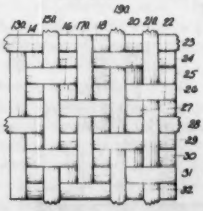
PAPERMAKER'S FORMING FABRIC

Charles E. Thompson, Guilderland, N.Y., assignor to Huyck Corporation, Wake Forest, N.C.

Filed Feb. 11, 1980, Ser. No. 120,377

Int. Cl.³ D03D *15/00*

U.S. Cl. 139—383 A **3 Claims**



1. A papermaker's monoplanar fabric comprising interwoven warp and filling yarn systems, alternate warp yarns of said warp yarn system being woven in a preselected conventional unbalanced pepermaker's weave pattern chosen from the class consisting of a 1/2 twill, a 2/1 twill, a 1/4 twill, a 4/1 twill, a 2/3 twill, a 3/2 twill, a 1/5 twill, a 5/1 twill, a 1/4 sateen and a 4/1 sateen, the remaining warp yarns of said warp yarn system bing inverted so as to occupy positions with respect to said filling yarns opposite to those positions which they would occupy according to said preselected conventional unbalanced papermaker's weave pattern so that each fill yarn has an equal number of warp yarns passing thereover and thereunder,

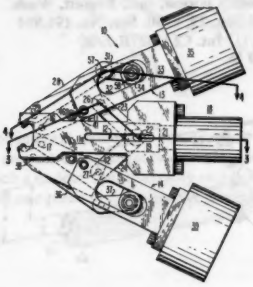
whereby the forces within said fabric are balanced reducing the tendency of edge curl and said fabric is provided with an improved support surface.

4,356,845

HOLDING AND NOTCHING TOOL FOR CRT IMPLOSION PROTECTION

Laurence B. Kimbrough, Lititz, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,538
Int. Cl.³ B21F 9/00
U.S. Cl. 140—93.2 15 Claims



1. A holding and notching tool for use with a system for applying a banding strap to articles comprising:

support means moveably arranged for selective positioning in the proximity of said strap and said article;

a plurality of arms pivotably supported by said support means and angularily disposed with respect to each other;

each of said arms including means for holding said strap to prevent relative movement of the end of said strap, said article and said support means prior to the application of tension to said strap, and means for notching said strap to prevent relative movement of said end of said strap, said article and said support means during the application of tension to said strap;

means for pivoting said arms to pivot said means for holding to move in a closing direction and hold the edges of said end of said strap; and

means for rotating said means for notching relative to said means for holding to form notches in said end of said strap.

4,356,846

APPARATUS FOR STRANDING MULTI-LAYER CABLE

Minoru Yamada, Mississauga, and Rokuzo Ito, Toronto, both of Canada, assignors to Canada Wire and Cable Limited, Toronto, Canada

Filed Mar. 25, 1980, Ser. No. 133,925
Claims priority, application Canada, Jan. 9, 1980, 343337
Int. Cl.³ D07B 3/00
U.S. Cl. 140—115 5 Claims

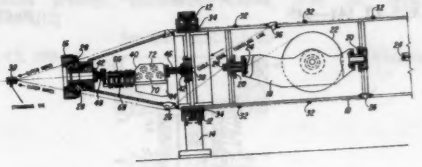
1. An apparatus for stranding an outer layer of wires on an inner layer cable core comprising:

(a) a tubular stranding machine comprising a rotating tube within which are stationarily mounted on the same axis a series of cradles each supporting a spool of wire from which are paid-off the outer wires;

(b) means for guiding said outer wires along the outside wall of said tube towards a stranding die located at the front of the stranding machine;

(c) means for guiding a cable core originating from the back of the stranding machine along the outside wall of said tube and then inside the tube through a guiding die located on the same axis as the tube, towards said stranding die; and

(d) a wire straightener stationarily mounted on the axis of



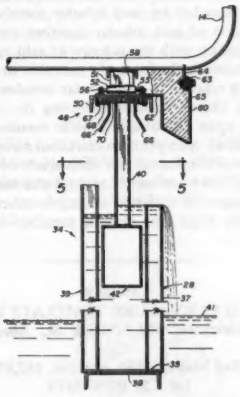
the tube between the guiding die and the stranding die and through which is passed the cable core to eliminate the waviness of the cable core due to rotation during traveling along the outside wall of the tube.

4,356,847

REMOVABLE SEAL FOR ASH HOPPERS AND THE LIKE

Paul C. Anderson, Ottawa, Canada, and Robert P. Sullivan, Chattanooga, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 2, 1981, Ser. No. 230,917
Int. Cl.³ B65B 3/04
U.S. Cl. 141—311 R 11 Claims



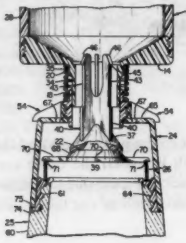
10. An ash producing facility having a bottom ash opening, a submerged scraper type, laterally movable ash hopper beneath said opening adapted to be filled with water to a predetermined level, and means providing a removable substantially gas-tight seal between the furnace and the hopper, said seal means including an endless trough mounted on said hopper and sealed with relation thereto, said trough extending around a downward projection of said ash opening, an endless float positioned in and extending throughout said trough, a corrugated sheet member extending up from said float throughout the extent thereof engaging the furnace bottom when in an upper position and spaced therefrom when in a lower position, resilient means providing a general fluid-tight seal between said sheet member and said furnace bottom when the former is in its upper position, and means for controlling the admission and discharge of water to said trough to control the position of said metallic member by said float.

4,356,848

DISPENSER ASSEMBLY

Henry J. Spies, P.O. Box 424, Princeville-Hanalei, Kauai, Hi. 96714

Filed May 30, 1980, Ser. No. 154,803
Int. Cl.³ B65B *3/06*
U.S. Cl. 141—349 **20 Claims**



1. In a dispenser apparatus adapted for controlling the passage of flowable material from a container wherein said container includes a generally tubular member projecting outwardly from said container with the inner surface of said tubular member in communication with the interior of said container and said tubular member terminating in an open end, the improvement comprising:

a dispenser spout coupled to said tubular member including an end closure open support means mounting said end closure in coaxial, spaced relation to said open end of said tubular whereby to define a continuous open space between said end closure and the interior of said container which is bounded by said tubular member so that said inner surface of said tubular member remains in direct communication with the interior of said container; and

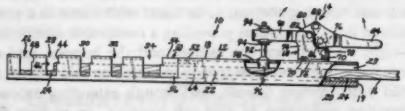
a sealing member in the form of a movable sleeve disposed in telescoping relation to said tubular member for movement between a closed position covering the open space between the open end of said tubular member and said end closure and an open position retracted away from said end closure so as to uncover the open space between said end closure and the open end of said tubular member, and bias means engageable with said sealing member and operative to normally urge said sealing member into the closed position.

4,356,849

MOLDING CURVATURE TEMPLATE FIXTURE

Donald L. Fredrickson, 410 S. High St., Aberdeen, S. Dak. 57401

Filed May 8, 1980, Ser. No. 147,877
Int. Cl.³ B27C *5/10*
U.S. Cl. 144—144 R **15 Claims**



1. A fixture for guiding a cutting tool to shape an end of a strip of molding, said molding including a shaped side with a longitudinally-uniform, contoured cross-sectional shape, said fixture comprising;

means for supporting said molding and said cutting tool, said molding and cutting tool supporting means including a box-section frame having a bottom and a top with sidewalls extending therebetween, said frame having an open insertion end, whereby said molding may be inserted into said frame and supported on the bottom adjacent a sidewall with said cutting tool supported by the top;

means for holding said molding to said molding and tool supporting means; and

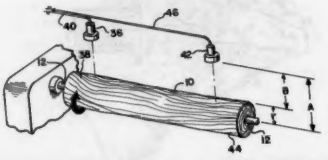
means for guiding said cutting tool along said molding and tool supporting means causing said cutting tool to shape an end of said molding to be substantially similar to the cross-sectional shape of the shaped side of said molding.

4,356,850

VENEER LATHE SCANNING SYSTEM

Darrell N. Halgrimson, Edmonds; Donald H. Hanson, Arlington, and Richard T. King, Mountlake Terrace, all of Wash., assignors to Black Clawson, Inc., Everett, Wash.

Filed Sep. 29, 1980, Ser. No. 191,884
Int. Cl.³ B27B *1/00*
U.S. Cl. 144—209 R **12 Claims**



1. A scanning device for use with a veneer lathe for providing an indication of the radius of a peeler block mounted on the lathe spindle, comprising:

first sonic transducer means, mounted adjacent a first end of said peeler block, for directing a burst of sonic energy toward said peeler block in response to a transducer input signal, and for providing a transducer output signal in response to receipt of sonic energy reflected from said peeler block adjacent the first end thereof,

second sonic transducer means, mounted adjacent a second end of said peeler block opposite said first end, for directing a burst of sonic energy toward said peeler block in response to a transducer input signal, and for providing a transducer output signal in response to receipt of sonic energy reflected from said peeler block adjacent the second end thereof,

transmit circuit means for supplying said transducer input signals to said first and second sonic transducer means in response to transmit control signals, and

transducer receiver circuit means for providing a reception signals in response to transducer output signals from said first and second sonic transducer means, whereby the time delays between said transmit control signals and said reception signals provide an indication of the distance between said first transducer means and the surface of said peeler block adjacent the first end thereof and an indication of the distance between said second transducer and the surface of said peeler block adjacent the second end thereof for calculation of peeler block radius adjacent said first and second ends thereof.

4,356,851

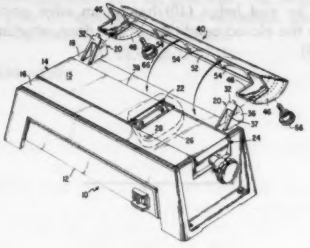
JOINTER-PLANER FENCE MOUNTING

Thomas G. Glore, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 1, 1980, Ser. No. 211,489
Int. Cl.³ B27C *1/14, 1/12*
U.S. Cl. 144—253 G **13 Claims**

1. Jointer-planer comprising a single generally U-shaped die-casting of integral one-piece construction extending generally the full length and breadth of the machine having a base section defining an out-feed table and two parallel, spaced apart side edge leg portions extending past a cutter assembly

and on opposite sides of an in-feed table so that the in-feed table is disposed between the elongated side edge leg portions, one of said elongated side edge leg portions being provided with a pair of longitudinally spaced apart fence mounting bracket



portions of integral, one-piece construction therewith having generally arcuate outer surfaces providing a virtual pivot axis about which a molded longitudinally extensive elongated fence of integral, one-piece construction is positioned.

4,356,852

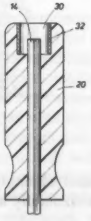
HAND DRIVE TOOL

William C. Smith, Barrington, Ill., assignor to Innovative Tool Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 927,465, Jul. 24, 1978, Pat. No. 4,212,336. This application Jul. 14, 1980, Ser. No. 168,548

Int. Cl.³ B25G *1/00*

U.S. Cl. 145—61 L **8 Claims**



1. An improved hand drive tool comprising a steel shank and a lightweight plastic handle fixedly secured and surrounding the upper end of said shank for hand-driving said shank,

said shank including a tip at the lower end, said tip adapted to engage the head of a fastener and transmit torque to said fastner,

a cylindrically shaped opening or well positioned in the upper end of said handle, coaxial with the axis of said shank, said opening or well being large enough to receive the socket of a standard socket wrench, the upper portion of said shank extending into said opening or well, whereby said well is adapted to receive a standard socket wrench in engagement with the upper end of said shank for the application of torque to said shank in addition to that provided by the plastic handle.

4,356,853

BAG

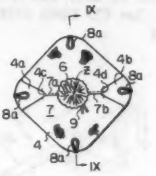
Keiji Sekiguchi, Uozu, Japan, assignor to Toyama Industry Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,832

Claims priority, application Japan, May 10, 1979, 54/62471[U]

Int. Cl.³ B65D *33/00*

U.S. Cl. 150—1 **2 Claims**



1. In a bag for use in storing and transporting a bulk material, having a cylindrical body portion with an axis, a bottom end portion which closes the bottom opening of said cylindrical body, a top end portion having an opening for filling the bag in the central portion of said top end portion about the axis, a plurality of handling slings sewn to said bag body at predetermined positions adjacent to said top end portion the improvement which comprises; a top end portion formed integrally with said cylindrical body portion, having a cylindrical portion for filling the bag having an opening smaller than the cylindrical body portion and sutured by a seam formed along a plane of the axis of said cylindrical body portion wherein said cylindrical body portion is provided with a pair of selvages formed at both end portions of said seam for said top end portion, said selvages folded inwardly and sewn to said seam.

4,356,854

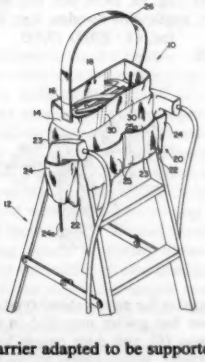
WORK POUCH

Ellis McGee, 1700 S. 6th St., Monroe, La. 71202

Continuation of Ser. No. 929,903, Aug. 1, 1978, abandoned. This application Aug. 3, 1981, Ser. No. 289,227

Int. Cl.³ B65D *85/00*

U.S. Cl. 150—12 **9 Claims**



1. An article carrier adapted to be supported on a pedestal, comprising:

a central compartment having a base adapted to rest on the top of the pedestal and an upstanding peripheral sidewall;

a flexible skirt depending from the central compartment and adapted to hang beside the upper portion of the pedestal, the skirt having pocket means on opposite sides thereof for receiving articles, the pocket means including a pair of open-topped pockets on opposite sides of the skirt respec-

tively, said pockets each being configured to receive an electric drill; and

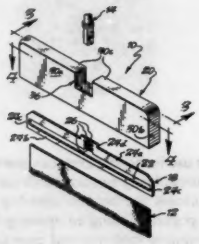
a handle in the form of a strap attached to opposite sides of said sidewall.

4,356,855

VANE HOLDING ASSEMBLY

Joseph C. Holzer, Liverpool, N.Y., assignor to Joanna Western Mills Company, Chicago, Ill.

Filed Jul. 13, 1981, Ser. No. 282,944
Int. Cl.³ E06B *9/38*
U.S. Cl. 160—178 R 6 Claims



1. A vane holding assembly for suspending a vertical vane formed of a pliable material from a hook of a venetian blind mechanism, said assembly comprising:

an elongated housing defining a downwardly opening cavity and an upper opening providing for insertion of said hook into said cavity; and

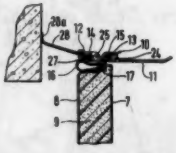
an elongated vane holding bar for insertion into said cavity for connection with said hook adjacent said upper opening, said holding bar having a lengthwise extending mounting slot for receiving an upper end of said vane in folded relation through said mounting slot, said housing having means for frictionally securing said folded vane to said holding bar incident to insertion thereof within said cavity.

4,356,856

DOOR HEAD GASKET FOR OVERHEAD DOORS AND THE LIKE

Fred B. Bengtsson, Kyrkas trappor 3, S-433 00 Partille, Sweden

Filed Aug. 10, 1979, Ser. No. 65,545
Claims priority, application Sweden, Apr. 4, 1979, 7902991
Int. Cl.³ E05D *15/00*
U.S. Cl. 160—209 5 Claims



1. Door head gasket for an overhead type door and the like, wherein said door has guides mounted in opposing vertical edges of a doorway (6), and door panels having outer edges movable in said guides, which gasket serves the purpose in the closed position of the door to bridge the distance between an upper edge portion of a door panel and a wall along which the door panel is displaceable, said gasket being characterized by, comprising a free stiff ledge (10) extending between the guides of the door panels, said ledge being attached to said upper edge portion of the door panel only near to the outer edges of the door panels, a band (16) of flexible material extending between points of attachment, one longitudinal edge of said band being connected with the ledge, and the other longitudinal edge of the band being connected with the upper edge portion of said door panel, whereby the ledge will follow the door panel in its movement and a seal between the door panel and the ledge is maintained independently of the extension of the door panel between its guided edges, and a flexible sealing ledge (28) supported by said ledge (10) having an edge portion (28*a*) thereof, in the closed condition of the door, abutting against the wall (5).

4,356,857

LOUVERED PANEL ASSEMBLY WITH CHAIN TYPE LADDER TAPES

Thomas T. Wilson, San Carlos, Calif., assignor to Epoxon Products, Inc., San Carlos, Calif.

Filed Nov. 14, 1980, Ser. No. 207,187
Int. Cl.³ E06B *3/12*
U.S. Cl. 160—229 B 10 Claims

1. A louvered panel assembly comprising:

(a) a plurality of horizontally arranged, vertically spaced louvers, and

(b) a plurality of substantially vertically arranged horizontally spaced, louver-supporting tapes,

(c) each tape comprising a plurality of links connected to each other,

(d) each link supporting a louver and comprising a substantially vertical link segment and an outwardly and downwardly angled louver-support segment extending from the upper end of the link segment, the louver-support segment having an inwardly reversely shaped lower end portion forming a seat supporting the lower margin of the louver and positioning the louver between the louver-support segment and the link segment, the upper margin of the louver bearing against the upper inside portion of the link segment,

(e) the link segment having on its upper and lower terminal portions upper and lower connecting means, respectively, for connecting it to the adjacent links.

4,356,858

DIE CASTING MACHINE

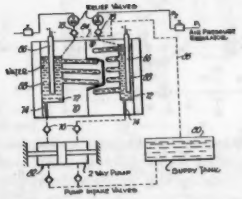
Guido Perrella, Senneville, Canada, and William E. Thompson, Anderson, Ind., assignors to DBM Industries Limited, Montreal, Canada

Division of Ser. No. 929,148, Jul. 31, 1978, Pat. No. 4,248,289. This application Sep. 29, 1980, Ser. No. 191,624

Claims priority, application United Kingdom, Dec. 1, 1977, 50179/77; Canada, Jun. 12, 1978, 305228

Int. Cl.³ B22D *17/32*

U.S. Cl. 164—154 2 Claims



1. Apparatus for controlling the temperature of the molds in a die casting machine while removing heat from molten metal supplied to cavities in said molds, comprising;

manifold passages defined in said molds for retaining cooling water in the molds adjacent the cavities;

inlet and outlet means associated with said manifold passages for flowing coolant water through said manifold passages;

pressure relief means associated with said outlet means for maintaining a predetermined internal pressure of the cooling water within the manifold passages;

adjustable regulator means associated with said pressure relief means for controlling said pressure relief means and therefor the temperature of the cooling water in said manifold passages by removing heat from said mold cavities through the release of steam produced by evaporation of said cooling water in the manifold passages adjacent the cavities;

a water supply tank associated with said outlet means for receiving condensed steam released from said manifold passages by the pressure relief means; and

means for injecting a make-up volume of water into said manifold passages to replace water that has evaporated and was removed from said manifold passages via the pressure relief means, comprising a supply line from said tank to said manifold passages; pump means in said line and inlet valve means between said pump and said manifold passages.

4,356,859

LOST WAX FEEDER AND RUNNER SYSTEMS

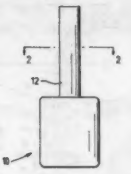
Philip Savage, Littleover, England, assignor to Rolls-Royce Limited, London, England

Filed Jan. 15, 1981, Ser. No. 225,397

Claims priority, application United Kingdom, Feb. 12, 1980, 8004669

Int. Cl.³ B22C *7/02*

U.S. Cl. 164—244 5 Claims



1. A wax pattern and runner including crushable means, which means are compressed upon thermal expansion of the wax pattern and runner when the wax is heated and removed from a ceramic mould.

4,356,860

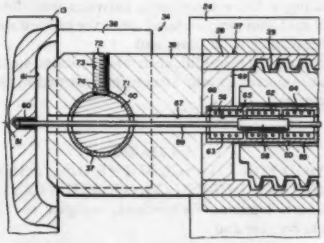
CONTINUOUS CASTING MOLD SIDE WALL ADJUSTMENT SYSTEM

Kirk M. Gladwin, 21000 E. River, Grosse Ile, Mich. 48138

Filed Sep. 2, 1980, Ser. No. 183,341

Int. Cl.³ B22D *11/00*

U.S. Cl. 164—451 10 Claims



1. Apparatus for measuring the position of at least one side wall mold member relative to the center of an adjustable width continuous casting mold cavity formed of a pair of spaced apart primary mold members, forming opposed casting faces, and side wall mold members arranged between the primary mold members at the opposite sides thereof to provide a roughly rectangular shaped, in cross section, open ended cavity; means for releasably securing the side wall mold members to the primary mold members for permitting movement of at least one side wall mold member toward the other, and including fixed mounting means supported between the primary mold members and outwardly of said one movable side wall mold member, and an adjustable length connector member interconnecting said fixed mounting means and said one movable side wall mold member, comprising:

said connector member containing an axial bore passing completely therethrough;

transducer means having at least a portion thereof secured to said one movable side wall mold member;

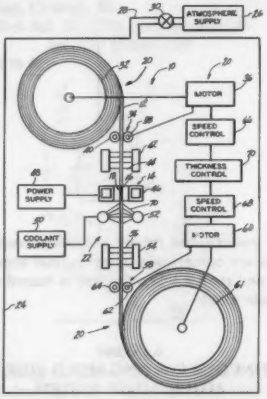
at least a part of said transducer means being positioned interiorly of said connector member; and

the movement of said one side wall mold member in response to varying the length of said connector member for actuating said transducer means.

4,356,861
PROCESS FOR RECRYSTALLIZATION OF THIN STRIP MATERIAL

Joseph Winter, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Oct. 6, 1980, Ser. No. 194,539
Int. Cl.³ B22C 27/02; C22B 9/02
U.S. Cl. 164—462 24 Claims



1. A process for recrystallization of thin strip material comprising:

electromagnetically melting the said thin strip material to provide a molten surface and a substantially solid core;

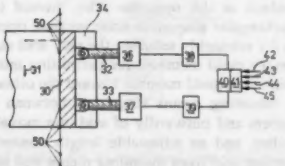
providing relative movement between unmelted thin strip and said thin strip material with the molten surface and a substantially solid core; and

controlling the resolidification of the molten surface layer so that preferred crystal structure is formed in the thin strip material.

4,356,862
METHOD FOR CHANGING THE DIMENSIONS OF A STRAND DURING CONTINUOUS CASTING

Hans Gloor, Umiken, Switzerland, assignor to Concast AG, Zurich, Switzerland

Filed Oct. 6, 1980, Ser. No. 194,002
Claims priority, application Switzerland, Nov. 2, 1979, 9836/79
Int. Cl.³ B22D 11/04
U.S. Cl. 164—491 7 Claims



1. A method of changing the dimensions of a continuously cast strand during the continuous casting operation while a pour is in progress, comprising the steps of:

providing for at least one movable mold wall two mold wall-displacement devices arranged behind one another with respect to the direction of travel of the continuously cast strand;

moving said at least one movable mold wall by means of said two displacement devices about a pivot axis extending transversely with respect to the lengthwise axis of the cast strand and parallel to the mold wall;

at least during a time span of the pivotal movement of the mold wall altering the mutual relationship of the displacement speeds of both displacement devices;

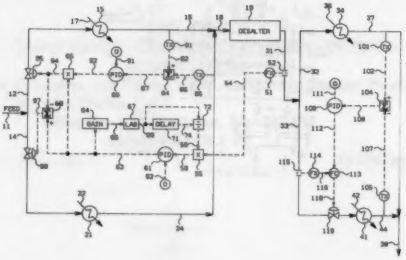
shifting the position of the pivot axis essentially parallel to its starting position; and

prior to termination of the changing of the dimension of the strand pivoting the mold wall into a position corresponding to the desired casting taper.

4,356,863
TEMPERATURE CONTROL FOR PREHEATING A CRUDE OIL FEEDSTOCK

Danny L. Furr, Broken Arrow, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 8, 1980, Ser. No. 184,841
Int. Cl.³ F28F 27/00
U.S. Cl. 165—1 10 Claims



1. Apparatus comprising:

means for splitting a crude oil feed stream into at least first and second feed streams;

a desalting means;

a first heat exchange means;

means for providing said first feed stream through said first heat exchange means to said desalting means;

a second heat exchange means;

means for providing said second feed stream through said second heat exchange means to said desalting means;

means for withdrawing crude oil from said desalting means;

means for establishing a first signal representative of the flow rate of the crude oil flowing from said desalting means;

means for establishing a second signal representative of the desired flow rate of the crude oil flowing from said desalting means;

means for establishing a biasing term which is responsive to the delay between the time said second signal is changed and the time said first signal changes in response to a change in said second signal;

means for multiplying said first signal by said biasing term to thereby establish a third signal which is representative of what the actual flow rate of the crude oil flowing from said desalting means would be if there were no delay between the time said second signal is changed and the time said first signal changes in response to a change in said second signal;

means for comparing said third signal and said second signal and for establishing a fourth signal responsive to the difference between said second signal and said third signal;

means for establishing a fifth signal which is representative of the percentage of said crude oil feed stream which must be provided as said first feed stream to said desalting means to maintain the temperature of said first feed stream after said first feed stream passes through said first heat exchange means substantially equal to the temperature of

said second feed stream after said second feed stream passes through said second heat exchange means;

means for multiplying said fourth signal by said fifth signal to establish a sixth signal representative of the required flow rate of said first feed stream; and

means for manipulating the flow rate of said first feed stream in response to said sixth signal.

4,356,864

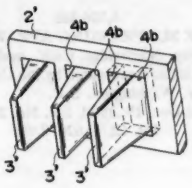
RADIATING DEVICE FOR POWER AMPLIFIER ETC.

Shoji Ariga, and Kazuo Suzuki, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,208

Int. Cl.³ H01L *23/36*

U.S. Cl. 165—80 B **5 Claims**



1. A radiating device comprising: an escutcheon of an electrical appliance, and a plurality of fin members fitted to said escutcheon for heat dissipation; said escutcheon having a plurality of openings each formed at a position adjacent to the base portion of the respective fin member, each of said openings being formed square, and each of said fin members being fitted to the escutcheon in such a manner that it is fitted in the associated opening.

4,356,865

PUMP PLUG FOR USE IN WELL OPERATIONS

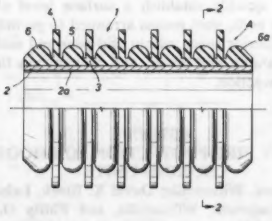
Cornelis Appel, and Bartel Kuilman, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 8, 1981, Ser. No. 300,407

Claims priority, application United Kingdom, Sep. 25, 1980, 8030936

Int. Cl.³ E21B *23/08*

U.S. Cl. 166—153 **5 Claims**



1. Pump plug for use in well operations, the plug comprising a tubular sleeve with a throughbore having a central axis, a plurality of annular sealing fins of resilient material mounted outwardly on the sleeve, each sealing fin being flexible in both directions of the central axis of the sleeve and having at least the central portion thereof symmetrically arranged with respect to a plane perpendicular to the said central axis, and support means mounted on the sleeve on both sides of the sealing fins for supporting the sealing fins in both of the flexed positions thereof, each of said support means being circular in shape and having a diameter less than the adjacent sealing fin, the outer edge of each support means being curved upwardly and inwardly, when viewed in axial cross-section, at least on the surface adjacent a sealing fin, said support means having a thickness sufficient such that the curved outer edge thereof forms a support for that portion of the sealing fin extending radially outwardly beyond the curved outer edge of the support means.

4,356,866

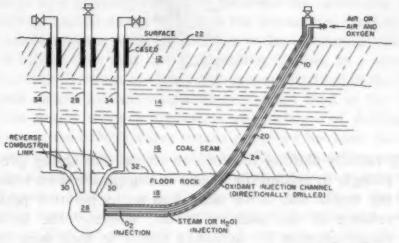
PROCESS OF UNDERGROUND COAL GASIFICATION

Joseph G. Savins, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,725

Int. Cl.³ C10J *5/00*; E21B *43/243*

U.S. Cl. 166—261 **20 Claims**



1. A method for gasifying underground coal seams by in-situ gasification which comprises providing a cavity in the floor rock underlying the coal formation, providing a deviated injection borehole extending from the earth's surface and communicating with said cavity, providing at least one upwardly radially extending injection channel that communicates the cavity with the coal seam at the interface of the coal seam and the floor rock underlying the coal seam, providing at least one production well for each injection channel, said production well extending from the earth's surface and communicating with said coal seam near the base of the formation and laterally spaced apart from said injection channel and lying approximately on the same radii as said injection channel, injecting an oxidant in said injection well igniting said coal seam in said injector channel to form a gasification zone and generate hot product gases at the interface of said coal seam and the floor rock underlying the coal formation, continuing to inject said oxidant to propagate said gasification zone through said seam in a direction toward the production well and producing said hot product gases into said production well.

4,356,867

TEMPORARY LOCK-OPEN TOOL FOR SUBTERRANEAN WELL VALVE

Michael A. Carmody, Broken Arrow, Okla., assignor to Baker International Corporation, Orange, Calif.

Continuation-in-part of Ser. No. 232,473, Feb. 9, 1981. This application Sep. 28, 1981, Ser. No. 306,047

Int. Cl.³ E21B *34/06*

U.S. Cl. 166—373 **14 Claims**

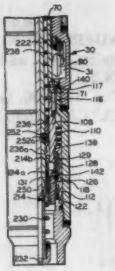
1. A method for temporarily mechanically locking a valve mounted in a tubular conduit of a subterranean well in an open position relative to the conduit, the valve having an actuating sleeve coaxially shiftably mounted in the conduit, latching means engagable with one end of the actuating sleeve in its valve opening position and shiftable latch restraining means normally preventing engagement of the latching means with the actuating sleeve, comprising the steps of:

(1) opening the valve by axially shifting the actuating sleeve to its valve opening position;

(2) assembling on a tubular mandrel expandable fingers, a spring pressed axially movable plunger for expanding the

fingers and a radially shiftable lock retaining the spring pressed plunger in a cocked position;

(3) inserting the mandrel assemblage in the tubular conduit with the expandable fingers disposed adjacent the latching means;



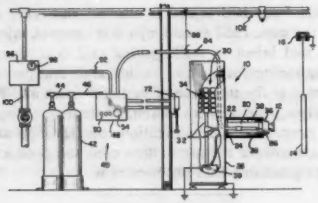
(4) radially shifting the lock to release the spring pressed plunger to expand the fingers to engage the latch restraining means and move same into an inoperative position relative to the latching means, whereby the latching means engages the actuating sleeve to lock same in its valve open position.

4,356,868

FIRE-EXTINGUISHANT SYSTEM

Stanley L. Bentley, Indianapolis, Ind., and Frank A. Bloomer, Madison Heights, Mich., assignors to Ransburg Corporation, Indianapolis, Ind.

Filed Jul. 30, 1980, Ser. No. 173,789
Int. Cl.³ A62C *35/02*
U.S. Cl. 169—26 **14 Claims**



1. In a material coating system including a device for dispensing coating material, a source of high magnitude electrostatic potential, means for coupling a portion of the device to the high potential source, means for insulating said device portion from ground potential to prevent discharge of said portion, a target to be coated by dispensed coating material from the device, and means for maintaining the target at a low magnitude potential relative to the source potential; a fire extinguishing system comprising a source of fire extinguishant, a fusible means for stopping the flow of fire extinguishant and for permitting such flow when melted by the heat of a fire, means for mounting the fusible means adjacent said device portion, and means for coupling said fusible means to said source of fire extinguishant, at least one of said fusible means, said coupling means and said source of extinguishant including means for electrically insulating said device portion to maintain the high magnitude potential on said device portion.

8. A fire-extinguishing system comprising:

a source of fire extinguishant maintained at an elevated pressure,

first and second conduits, and means coupling the first and second conduits to the source of fire extinguishant,

regulator means for reducing the pressure of the extinguishant, the regulator means in the first conduit,

a fusible conduit for containing extinguishant at a reduced pressure in the vicinity of a possible source of fire, and means for coupling the fusible conduit to the regulator means, and

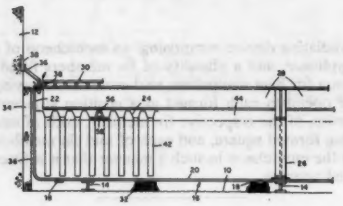
a pressure change-actuated valve and means for coupling the pressure change-actuated valve to the fusible conduit and to the source of fire extinguishant through the second conduit, the pressure change-actuated valve being responsive to a drop in pressure in the fusible conduit for switching to provide a flow path of extinguishant at the elevated pressure of the source through the fusible conduit.

4,356,869

FIRE SUPPRESSING APPARATUS

Kenneth E. Buttrey, Northridge, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 19, 1980, Ser. No. 218,248
Int. Cl.³ A62C *7/00*
U.S. Cl. 169—49 **11 Claims**



1. Apparatus for quenching combustion of flowable material such as liquid sodium comprising:

a pan for receiving said flowable material;

a cover on said pan having perforations formed therein; and

tubes vertically disposed below said cover and, respectively, communicating with the space above said cover through said perforations, the lower ends of said tubes closely approaching but being spaced from the bottom of said pan so that said flowable material entering one or more of said tubes will quickly establish a surface level above said lower tube ends, vent means arranged to permit gas flow from the interior space within said pans and said cover to the space above said cover, and prevent gas flow in the opposite direction.

4,356,870

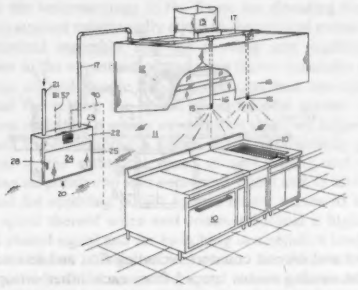
WATER SPRAY FIRE PROTECTION FOR HOODS OVER COOKING UNITS

Edson C. Gaylord, Wilsonville; David K. Black, Lake Oswego; Russell L. Anderson, Wilsonville, and Philip O. Morton, Portland, all of Oreg., assignors to Gaylord Industries, Inc., Wilsonville, Oreg.

Filed Nov. 18, 1980, Ser. No. 207,912
Int. Cl.³ A62C *13/24*
U.S. Cl. 169—65 **17 Claims**

1. A fire protection system for hoods over cooking units comprising a water spray nozzle under the hood arranged to spray water downward toward said cooking units, a hand valve for turning off the water supply for said spray nozzle; a normally energized operating condition signal light, a system not operational signal light, a fire condition signal light and audible alarm; fire responsive means under said hood arranged to respond to a fire on said cooking units and actuate said spray nozzle; means responsive to the operation of said spray nozzle

to turn off both said operating condition signal light and an energy supply for said cooking units and turn on said fire condition signal light and audible alarm; and a manual reset switch arranged to turn on said operating condition signal light and said energy supply for said cooking units and turn off said fire condition signal light and audible alarm, a valve switch actuated by turning said hand valve to off position and a water pressure switch actuated by low pressure in said water pressure system; and means operated by said actuation of said valve



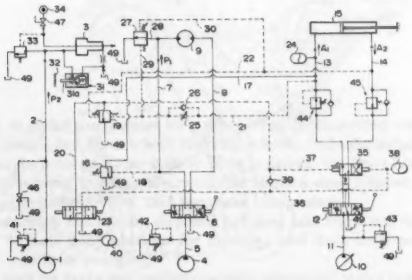
switch or pressure switch to turn off said operating condition signal light and said energy supply for said cooking units, turn on said audible alarm and flash said system not operational signal light on and off continuously, a manual bypass test switch arranged to make said valve switch and water pressure switch ineffective, said signal lights, test switch and hand valve being mounted in a cabinet having normally closed doors, said test switch and valve being arranged to prevent the closing of said doors when said test switch is in test position and said valve is in closed position.

4,356,871

HYDRAULIC CONTROL SYSTEM FOR A ROCK DRILL

Kozo Fujikawa, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Oct. 6, 1980, Ser. No. 194,391
Claims priority, application Japan, Oct. 6, 1979, 54-128991
Int. Cl.³ B23Q *5/00*; E21C *5/16*
U.S. Cl. 173—8 **5 Claims**



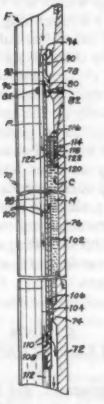
1. A rock drill comprising drilling rod means, striking actuator means for applying striking movements to said drilling rod means, reversible rotary actuator means for rotating the drilling rod means, reversible feed actuator means for advancing and retreating said drilling rod means, first conduit means connected with said striking actuator means for providing a supply of pressurized fluid to the striking actuator means to produce the striking movements of the striking actuator means, second conduit means connected with said rotary actuator means for providing a supply of pressurized fluid so that a positive driving rotation is produced in the rotary actuator means, advancing conduit means connected with said feed actuator means for providing a supply of pressurized fluid so that a rod advancing movement is produced in the feed actuator means, retreating conduit means connected with said feed actuator means for providing a supply of pressurized fluid so that a rod retreating movement is produced in the feed actuator means, first pressure relief means provided in said advancing conduit means and responsive to a pressure in the second conduit means to relieve the pressurized fluid in the advancing conduit means when the pressure in the second conduit means is increased beyond a first predetermined value, second pressure relief means provided in the first conduit means and responsive to a pressure difference between the advancing and retreating conduit means to relieve the pressurized fluid in the first conduit means when the pressure in the advancing conduit is not higher than that in the retreating conduit by a second predetermined value, control valve means provided in the first conduit means for relieving the pressurized fluid in the first conduit means when a predetermined distance of drilling is performed, switching valve means provided between the advancing and retreating conduit means for alternately connecting the advancing and retreating conduit means to pressurized fluid source means in accordance with a pressure in the first conduit means, means for controlling said switching valve means so that the pressurized fluid is introduced into the retreating conduit when there is an abrupt decrease in the pressure in the first conduit means.

4,356,872

DOWNHOLE CORE BARREL FLUSHING SYSTEM

Craig R. Hyland, Magna, Utah, assignor to Christensen, Inc., Salt Lake City, Utah

Filed Aug. 21, 1980, Ser. No. 179,587
Int. Cl.³ E21B *25/08*
U.S. Cl. 175—58 **15 Claims**



14. A method of flushing a core barrel downhole at existing conditions and pressures prior to retrieval to the surface comprising the steps of:

attaching a flushing device having a chamber containing flushing medium and means to displace the flushing medium therein to a core barrel for disposition downhole,

positioning the flushing device and attached core barrel downhole to take a core sample,

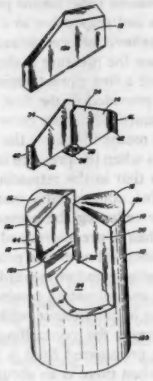
taking a core sample with the core barrel, and

actuating the flushing device following disposition and the taking of a core sample downhole to displace the flushing medium from the chamber and into the core barrel.

4,356,873
CUTTER MOUNTING AND APPARATUS AND METHOD FOR A DRILL BIT

William A. Dzink, Maple Heights, Ohio, assignor to Mining Tools, Div. of Smith Int'l., Inc., Mentor, Ohio

Filed Dec. 8, 1980, Ser. No. 213,892
Int. Cl.³ E21B *10/58, 10/62*
U.S. Cl. 175—410 11 Claims



4. A method for positioning a cutting element within a recess of a tool bit, and for attaching the cutting element to the tool bit comprising the steps of:

(a) providing a clip for retaining the cutting element;

(b) inserting the cutting element into the clip;

(c) moving the cutting element within the clip until a positioning structure of the clip engages a cooperating portion of the cutting element;

(d) inserting the clip into the tool bit recess;

(e) relocating the clip within the recess until a clip locating structure engages a cooperating portion of the tool bit;

(f) attaching the tool bit to the cutting element.

8. A tool bit assembly comprising:

(a) plate-like cutting element including longitudinal parallel sides, at least one cutting face, a face obverse to the cutting face, and a notch on the obverse face;

(b) a brazing clip including generally parallel side plates terminating in tabs oriented at an angle to the side plates, an interconnecting member joining the side plates in a spaced relationship corresponding to a dimension between the parallel cutting element sides, and a projection positioned on the interconnecting member; and

(c) a cylindrical tool bit including a slot on one end, the slot intersecting a circumferential surface of the tool bit to define locating edges.

4,356,874
WEIGHT CONTROLLER FOR CANNED FOOD AND THE LIKE

Donald W. Blincow, Claremont, and Robert G. Parks, Covina, both of Calif., assignors to General Nucleonics, Inc., Pomona, Calif.

Filed Oct. 20, 1980, Ser. No. 199,001
Int. Cl.³ G01G *3/14, 19/00;* G01N *23/00*
U.S. Cl. 177—210 FP 5 Claims

1. In an apparatus for determining weight of a container moving along a path past a weighing zone, the combination of:

a radioactive source;

a radiation detector;

means for mounting said source and detector at said weighing zone on opposite sides of said path for directing radiation along an axis from said source to said detector through a container moving through said weighing zone;

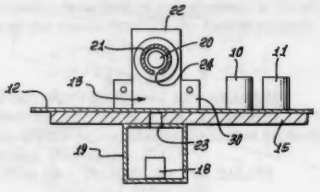
pulse discriminator means having the output of said radiation detector as an input and producing as an output, pulses corresponding to input pulses of a predetermined energy range;

a first counter for counting pulses and having the output of said pulse discriminator means as an input;

an oscillator providing a train of timing pulses as an output;

a second counter for counting pulses and having said oscillator output as an input;

means for turning said first and second counters on while a container is at said weighing zone to provide first and second counts as outputs, said means for turning on said



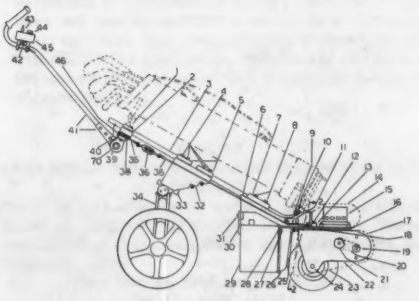
first and second counters including first and second position sensing means spaced from each other on opposite sides of said axis along said path at said weighing zone, with one of said position sensing means providing an on signal for starting said counters and the other of said position sensing means providing an off signal for stopping said counters; and

divider means having the outputs of said counters as inputs and providing the quotient as an output as a measure of the weight of the container, so that said weight determination is independent of the velocity of the container past said source and detector.

4,356,875
PORTABLE MOTORIZED GOLF CART

Robert H. Clune, Minster, Ohio, assignor to Elmer F. Clune, Tonawanda, N.Y.

Filed May 5, 1980, Ser. No. 146,665
Int. Cl.³ B62D *51/04*
U.S. Cl. 180—13 1 Claim



1. In a portable golf bag cart having an elongated main frame with upper and lower ends; a foldable undercarriage removably attached to the frame intermediate the ends thereof and a handle attached to the upper end of the frame; and a pair of free turning spaced wheels supported by the undercarriage; the improvement comprising:

a motorized assembly adapted to be removably attached to the lower end of the main frame; a plate adapted to be attached to the frame; a fork pivotally mounted to said plate; a wheel

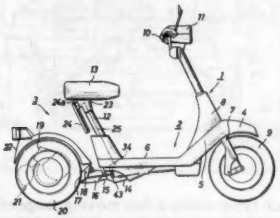
supported by said fork for pivotal movement about a substantially vertical axis; motor means supported by said assembly for driving said wheel; means adapted to mount said handle to the frame for permitting pivotal movement thereof about an axis substantially perpendicular to that of the frame; steering means for imparting pivotal movement to said wheel in response to pivotal movement of said handle about said axis; and steering means including a cable mounted about and affixed to a pulley with the ends of said cable being attached to said fork for imparting pivotal movement thereto; an adjustable spacer-riser assembly adapted to attach the undercarriage to the frame for elevating the frame by an amount substantially equal to the vertical extent of said motorized assembly and for moving said undercarriage closer to the upper end of said main frame; manually settable means on said handle for developing at least one command signal for setting the speed of said motor means; sensing means including a sensor mounted on said fork adjacent said wheel for developing a sensed signal substantially proportional to the rotational speed of said wheel; and control means responsive to said command signal and to said sensed signal for applying power to said motor means to increase the speed thereof when said command signal is higher than said sensed signal and for switching in a resistive load across the terminals of said motor means to reduce the speed thereof when said command signal is lower than said sensed signal whereby the speed of said wheel is maintained substantially constant about a preselected setting.

4,356,876

PARKING APPARATUS FOR USE ON A THREE-WHEELED MOTORIZED VEHICLE

Masaki Watanabe, Urawa; Goroei Wakatsuki, Fujimi, and Keiji Suzuki, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,404
Claims priority, application Japan, Apr. 5, 1979, 54-45085[U]
Int. Cl.³ B62D *61/08;* B62K *5/04*
U.S. Cl. 180—210 **10 Claims**



1. A parking apparatus for a three-wheeled motorized vehicle having one front wheel, two rear wheels, and substantially separate front and rear vehicle body portions, the front body portion being transversely swingable about a shaft relative to the rear body portion, said apparatus comprising:

a locking mechanism disposed between said front and rear vehicle body portions for disabling said front body portion from swinging;

a parking brake mechanism operably connected with a brake for said wheels;

means for operating, in common, both said locking mechanism and said parking brake mechanism;

said shaft comprising a stationary shaft secured in said rear body portion;

said locking mechanism comprising a lock plate secured to said shaft;

a case surrounding said shaft;

a pawl member provided in said case and normally urged to an inoperative position thereof;

a linkage adapted for bringing said pawl member into operative engagement with said lock plate; and

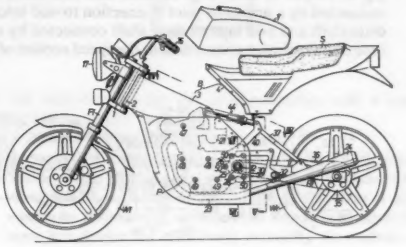
brake cables connected to said linkage, said linkage being rotatable by said operating member into its operative position to move said pawl member and said brake cables into the respective operative positions thereof.

4,356,877

MOTORCYCLE

Tadashi Kamiya, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1980, Ser. No. 152,102
Claims priority, application Japan, May 26, 1979, 54-65236
Int. Cl.³ B62K *25/20*
U.S. Cl. 180—227 **4 Claims**



1. A two-wheeled motorcycle comprising:

(a) a first assembly including a vehicle frame;

(b) a second assembly including:

(i) a power unit having an output shaft;

(ii) a rear fork pivotally connected to said power unit substantially in axial alignment with said power unit output shaft and supporting a rear wheel in driving connection with said output shaft, and

(iii) a rear shock absorber connected between said power unit and said rear fork for cushioning vertical rocking movements of said rear fork;

said vehicle frame comprising:

a shell structure of thin sheet material fixed at the front end to a head pipe and generally extending rearwardly and downward therefrom; and

a seat stay of channel cross-section detachably connected to the rear end of said shell structure and covering the top of the rear wheel, said shell structure including opposite side sections, a roof section interconnecting said side sections at the top ends thereof and a bottom section interconnecting said side sections at the bottom ends thereof; said shell structure being formed on the inside of the opposite side sections thereof with a pair of reinforcing and power-unit supporting bosses positioned in face-to-face relation to the respective side faces of said power unit in axial alignment with the output shaft thereof, said bosses being each formed centrally thereof with a tool window to make a connection of said rear fork to said power unit accessible from the outside of said shell structure;

whereby said first and second assemblies are assembled into a single unit by connecting said power unit with said vehicle frame.

4,356,878

ARTICULATED TRACTOR POWER TRAIN

Anthony M. Kestian, Highland, Mich., and Raymond J. Allori, Chicago, Ill., assignors to International Harvester Co., Chicago, Ill., by said Raymond J. Allori

Filed Jan. 22, 1980, Ser. No. 114,177
Int. Cl.³ B60K *17/34*
U.S. Cl. 180—235 **7 Claims**

1. In an articulated tractor having front and rear sections

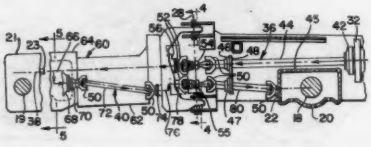
pivotally connected at a vertical axis of articulation, each of said sections supported by a pair of ground engaging wheels drivingly connected to a differential input through a front differential having a top surface and a rear differential and respective front and rear axles, the improvement comprising:

an engine mounted on said front section of said articulated tractor forward of said front section differential;

an engine output element mounted for rotation to said engine;

a first gear set mounted on said rear section of said tractor;

a first power path between said engine output element and said first gear set, said first power path comprising a first drive shaft extending rearwardly from said engine and in close proximity to said top surface of said front differential, a first intermediate shaft, a transmission having an interconnected speed section and a range section including an output of said range section, said first drive shaft connected by a universal joint connection to said intermediate shaft and said intermediate shaft connected by a slip type universal joint connection to the speed section of said



transmission and the output of the range section of said transmission connected to said first gear set;

a second power path from said first gear set to said rear differential, said second power path comprising a rear differential input connected between said first gear set and said rear differential;

a third power path extending from said first gear set to said front differential, said third power path comprising an interconnecting shaft, a second gear set, a second intermediate shaft and front axle drive shaft, said interconnecting shaft having universal joint connections at each end thereof connecting said interconnecting shaft with said respective first and second gear sets, said second intermediate shaft connected by a slip type universal joint connection to said second gear set and a universal joint connection to said front axle drive shaft, said front axle drive shaft connected through a universal joint to said front differential;

said first drive shaft located vertically above said front axle drive shaft.

4,356,879

MANIPULATION DEVICE FOR A TRANSMISSION APPARATUS

Shintaro Uchiyama, Fuchu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1980, Ser. No. 174,386

Claims priority, application Japan, Oct. 2, 1979, 54-127189

Int. Cl.³ B60K *17/34, 41/22*

U.S. Cl. 180—247 **8 Claims**

7. A manipulation device for a transmission apparatus of a vehicle having a first main drive shaft connected to a crankshaft of an engine through a clutch means, a sub-transmission provided adjacent to said first main drive shaft, a second main drive shaft provided adjacent said sub-transmission, said sub-transmission including reduction gear trains and a manual clutch means manually operable to select the transmitting speeds for transmitting the output of said first main drive shaft to said second main drive shaft, a third main drive shaft in parallel with said second main drive shaft, a main transmission provided on said second and third main drive shafts, means for transmitting the output of said third main drive shaft, said transmitting means comprising two transmitting systems for transmitting said output to the front axle and to the rear axle, respectively, a clutch device in one of said systems for connecting or disconnecting the transmission of the output to the corresponding said axle, comprising:

means comprising a shift rail axially slidably mounted for shifting said clutch means in said sub-transmission,

an actuating rail slidably mounted in parallel with said shift rail,

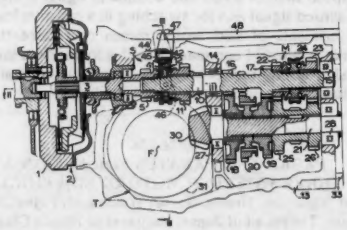
a fixed rail in parallel with said shift rail and said actuating rail,

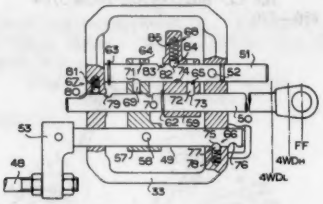
a shift lever connected to said actuating rail,

a shift fork slidably mounted on said actuating rail and said fixed rail, said shift fork being connected to said clutch device,

an arm secured to said shift rail and slidably engaged with said actuating rail and said fixed rail,

first interlock means between said actuating rail and said shift fork and said fixed rail for causing said actuating rail and said shift fork to come into fixed engagement relation



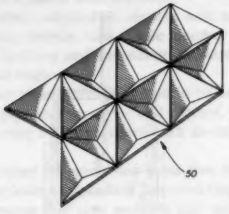


to each other within a first moving range of said actuating rail thereby causing shifting of the shift fork by manipulating said shift lever in one direction of movement of the actuating rail, and for causing said shift fork and said fixed rail to engage with each other within a second moving range of said actuating rail adjacent said first moving range,

second interlock means between said actuating rail and said arm and said fixed rail for causing said actuating rail and said arm to come into fixed engagement relation to each other within the second moving range of said actuating rail adjacent said first moving range causing shifting of said shift rail in another direction of movement of said actuating rail, and for causing said arm and said fixed rail to engage with each other within said first moving range of said actuating rail, and

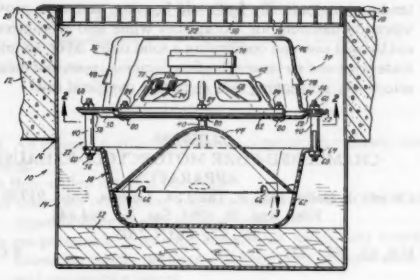
means disposed on said actuating rail between said shift fork and said arm for moving said shift fork in said first moving range in said another direction of movement, and respectively, for moving said arm in said one direction of movement of the actuating rail in said second moving range.

4,356,880
ACOUSTICAL REFLECTORS
James W. Downs, 3917 Villanova, Dallas, Tex. 75225
Filed Jul. 28, 1980, Ser. No. 172,649
Int. Cl.³ E04B 1/99
U.S. Cl. 181—30 27 Claims



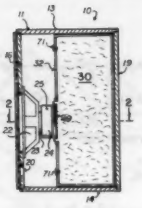
1. A sonic reflector system comprising: at least one panel including a plurality of similarly constructed reflectors with each reflector having three mutually perpendicular walls of sound reflective material, with each wall having the general shape of a right triangle with its hypotenuse edge lying in the same plane as the hypotenuse edge of each of the other two walls.

4,356,881
FLOOR SPEAKER
Benjamin W. Lowell, 45 Log Cabin Dr., Ladue, Mo. 63124
Filed Feb. 25, 1981, Ser. No. 237,868
Int. Cl.³ H04R 1/28; H05K 5/00
U.S. Cl. 181—150 10 Claims



1. A loudspeaker assembly and enclosure for floors having a speaker enclosure for installation at and below floor level, including a flat support means for attaching the enclosure to the floor surface and extending therethrough, the enclosure having a bottom and at least one wall, and means forming an opening to the interior of the enclosure, the opening being surrounded by the means for supporting the enclosure on the floor surface, the enclosure having sound absorbing means, and an open grill for covering the opening to the enclosure, the grill having a peripheral flange means for overlying the flange of the enclosure and for resting thereon, the assembly including a speaker assembly supportable on the bottom of the enclosure, the speaker assembly including a speaker, a speaker can covering the back of the speaker and a speaker baffle enclosing the front of the speaker, the speaker assembly also having a sound deflecting nose cone and a base for the sound deflecting nose cone, the nose cone being mounted in relation to the speaker so that sound projected from the speaker is deflected outwardly and reversed in direction by 180°, the speaker assembly having means spacing the nose cone and speaker in a fixed relationship.

4,356,882
DEVICE FOR ENLARGING THE EFFECTIVE VOLUME OF A LOUDSPEAKER ENCLOSURE
James C. Allen, 14 Lovejoy Rd., Andover, Mass. 01810
Filed Jan. 15, 1981, Ser. No. 225,418
Int. Cl.³ H04R 1/28
U.S. Cl. 181—151 6 Claims



1. An improvement for use in combination with a loudspeaker system which includes:

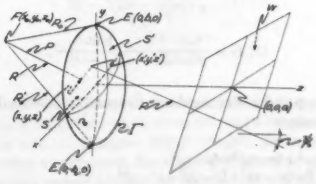
A. a vibratable cone or membrane; and

B. a speaker enclosure having a top, a bottom, a back, a pair of sides and a front having a speaker opening wherein the vibratable cone is mechanically coupled so that it may vibrate in response to an electrical signal, said improvement is a device for effectively enlarging the volume of the speaker enclosure in order to increase the compliance that the vibratable cone sees with said device comprising:

a. a gas having a Joule-Thomson coefficient of less than zero and an inversion temperature less than that of the ambient temperature of the environment in which the device is to be used; and

b. a collapsible walled container having an expandable and contractable volume which is used for enclosing said gas within the speaker enclosure and adapted to seal said gas therein and to seal atmospheric gases and water thereout.

4,356,883
ELLIPTICIZED RUBBER ACOUSTICAL LENS PROVIDING BALANCED ASTIGMATISM
Robert L. Sternberg, Noank, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Continuation of Ser. No. 138,013, Apr. 7, 1980, which is a continuation-in-part of Ser. No. 949,711, Oct. 10, 1978, Pat. No. 4,224,626. This application Sep. 21, 1981, Ser. No. 303,758
The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.
Int. Cl.³ G10K 11/00
U.S. Cl. 181—176 1 Claim



1. An ellipticized singlet azimuth versus elevation optimized and aperture extremized nonspherical acoustic lens made out of rubber with surfaces S and S' specified by the partial differential equations

$$S: \frac{\partial z}{\partial x} = F(A) \qquad \frac{\partial z}{\partial y} = G(A),$$

-continued

$$S: \frac{\partial(x',y')}{\partial(x,y)} = F'(A)\frac{\partial(x',y')}{\partial(x,y)}, \quad \frac{\partial(x',z')}{\partial(x,y)} = G'(A)\frac{\partial(x',y')}{\partial(x,y)},$$

the symmetry conditions

$$z(-x,y) = z(x,y), \qquad z'(-x',y') = z'(x',y'),$$

$$z(x,-y) = z(x,y), \qquad z'(x',-y') = z'(x',y'),$$

and the boundary conditions

$$z(x,y)=z'(x,y)=0,$$

on the ellipse

$$\Gamma: (x^2/b_o^2\cos^2\psi_o)+(y^2/b_o^2)=1$$

where

S and S' are the lens surfaces having functional representations of the forms z=z(x,y) and z'=z' (x',y') wherein x' and y' are themselves functions x'=x'(x,y) and y'=y'(x,y) of the independent variables x and y,

$$\frac{\partial z}{\partial x} \text{ and } \frac{\partial z}{\partial y}$$

are the partial derivatives of z with respect to the independent variables x and y respectively,

$$\frac{\partial(z',y')}{\partial(x,y)}, \frac{\partial(x',y')}{\partial(x,y)} \text{ and } \frac{\partial(x',z')}{\partial(x,y)}$$

are the Jacobian of z' and y' with respect to the independent variables x and y, the Jacobian of x' and y' with respect to the independent variables x and y and the Jacobian of x' and z' with respect to the independent variables x and y respectively, F(A), G(A), F'(A) and G'(A) are the functions of the arguments A=(x,y,z,x',y',z') defined as

$$F(A) = \frac{n_o(x'-x)p - xp'}{(z-z_o)p' - n_o(z'-z)p},$$

$$G(A) = \frac{n_o(y'-y)p - (y-y_o)p'}{(z-z_o)p' - n_o(z'-z)p},$$

$$F'(A) = \frac{n_o(x'-x)}{p'\cos\psi_o - n_o(z'-z)},$$

$$G'(A) = \frac{n_o(y'-y) + p'\sin\psi_o}{p'\cos\psi_o - n_o(z'-z)},$$

and where p and p' denote the path length elements defined by the expressions

$$p^2=x^2+(y-y_o)^2+(z-z_o)^2,$$
$$p'^2=(x'-x)^2+(y'-y)^2+(z'-z)^2,$$

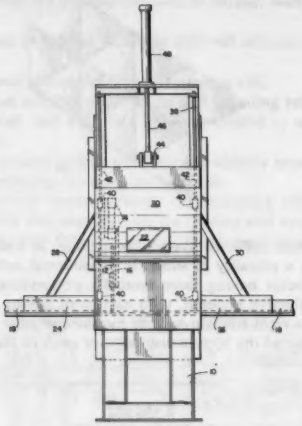
and n_o, y_o, z_o and ψ_o are respectively, the index of refraction of the lens material, the y and z coordinates of the finite focal point F and the off-axis angle to the infinite focal point F_∞, Γ is the ellipse bounding the lens formed by S and S' and is defined by the equation shown in which x and y are the independent variables and b_o is the maximum radius of the lens formed by S and S' and the semi-major axis of the ellipse Γ.

4,356,884

ACOUSTICAL ENCLOSURE SYSTEM

David B. Mortimer, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Aug. 31, 1981, Ser. No. 297,868
Int. Cl.³ F16F 7/12; G10K 11/00; H02K 5/24
U.S. Cl. 181—200 **7 Claims**



1. An acoustical enclosure for an overtable circular saw comprising a housing surrounding the blade of said saw, said housing providing acoustical enclosure for said saw and comprising a solid outer layer, a central layer of acoustical insulation material and a perforated inner layer, a pair of arms extending longitudinally from said housing, said arms providing vibration damping for workpieces while said workpieces are cut by said saw and comprising a solid outer layer, an intermediate layer and an inner vibration damping layer, and means for selectively positioning said enclosure over said saw.

4,356,885

CHAMBERED-CORE MOTORCYCLE-EXHAUST APPARATUS

Christy J. Dello, 1035 E. Third St., Corona, Calif. 91720

Filed Aug. 20, 1981, Ser. No. 294,441
Int. Cl.³ F01N 7/08
U.S. Cl. 181—227 **4 Claims**

1. A chambered-core motorcycle-exhaust apparatus, comprising:

an outer, elongated, tubular housing, one end of which is adapted to be secured to a motorcycle engine, and the opposite end of which is formed as an open free end;

an inner exhaust assembly mounted longitudinally within said housing;

a dead-air chamber formed between said outer housing and said inner exhaust assembly, whereby heat transfer and engine noise are substantially reduced;

means to support said inner exhaust assembly within said

outer housing, in order to define said dead-air chamber; and

means attached to said exhaust apparatus for mounting said exhaust apparatus to said motorcycle engine;

wherein said inner exhaust assembly is co-axially mounted within said outer housing, and comprises:

a first inner pipe section having one end thereof formed with an enlarged annular boss member;

a nipple member adapted to receive said enlarged annular boss member therein, said nipple member being affixed to said outer housing and extending outwardly therefrom to engage said engine;

a second inner pipe section adapted to be connected to said first inner pipe section at one end thereof, the opposite end thereof having a boss member with an enlarged diameter; and

a muffler secured adjacent said open free end of said housing, and including oppositely disposed ring members interposed between said pipe sections and said outer housing, whereby said dead-air chamber is defined therebetween and said enlarged boss of said second inner pipe section is adapted to be connected to one of said ring members.

4,356,886

EXTERNAL HOUSING FOR AN EXHAUST MUFFLER FOR INTERNAL COMBUSTION ENGINES

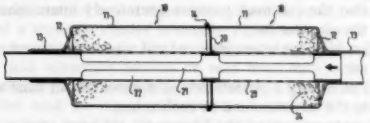
Otto Daude, Bovenden, and Heinz Peckmann, Göttingen, both of Fed. Rep. of Germany, assignors to Alcan Aluminiumwerke GmbH, Göttingen, Fed. Rep. of Germany

Filed Jul. 21, 1980, Ser. No. 170,728

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 2930046

Int. Cl.³ F01N *1/04, 7/18*

U.S. Cl. 181—250 **6 Claims**



1. An exhaust muffler for internal combustion engines, comprising:

a thin-walled external housing;

at least two connecting pieces respectively disposed at the opposite ends of said housing; and

a gas-permeable inner pipe component within said housing extending rigidly between and fixed at its opposite ends to said connecting pieces;

and wherein said housing comprises:

at least one pipe section which has at one end a seamlessly merging bottom, and at least one of said connecting pieces likewise seamlessly starting therefrom, said one pipe section with said bottom and said one connecting piece being of a malleable aluminum alloy extrusion molded in one piece with a relatively thin wall, and being mounted on and supported by said inner pipe component.

4,356,887

ROTATABLE PLATFORM ASSEMBLY

Robert E. Fisher, Berkeley, and Gerhard J. Weiner, Walnut Creek, both of Calif., assignors to Up-Right, Inc., Berkeley, Calif.

Filed Dec. 29, 1980, Ser. No. 221,031

Int. Cl.³ E04G *1/22*

U.S. Cl. 182—63 **15 Claims**

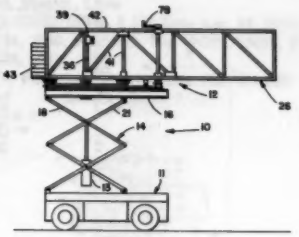
1. A rotatable platform assembly comprising:

first and second horizontal frames, one above the other,

a vertical post extending between said frame and rotatably journaled in one of said frames for rotation of the upper of said frames in a horizontal plane relative to the lower of said frames and about the vertical axis of said post,

a ring member fixed to said first frame, said ring member having a cylindrical vertical surface coaxial with said facing away from said post and an annular horizontal track surface coaxial with said post,

a plurality of rollers mounted on said second frame and in rolling engagement with said track surface of said ring member,



a chain sprocket mounted on said second frame for rotation about a vertical axis spaced outwardly from said ring member,

a plurality of sprocket pin members on and spaced around and projecting outwardly from said cylindrical vertical surface of said ring member,

an endless roller chain trained around said ring member and said chain sprocket and engaged by said sprocket pin members,

drive means mounted on one of said frames for rotating said chain sprocket about its vertical axis.

4,356,888

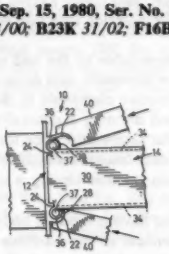
STRUCTURAL JOINT

Christen K. Steenberg, 18 Finchley Rd., Islington, Ontario M9A 2X4, Canada

Filed Sep. 15, 1980, Ser. No. 187,028

Int. Cl.³ B25G *3/00*; B23K *31/02*; F16B *9/00*; F06C *7/50*

U.S. Cl. 182—194 **11 Claims**



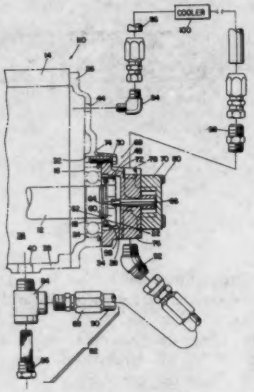
1. A structural joint formed upon joining two elements, the first element comprising an elongate major tongue of malleable material and an elongate minor tongue, the second element comprising a curled tab, the major and minor tongues defining an elongate recess adapted to receive the curled tab on joint formation, the minor tongue and the second element mutually penetrating and deforming each other, and the curled tab received in the recess between the minor and major tongues, the major tongue deformed about the curled tab to form an overturned portion which contacts the external surface of the curled tab, said overturned portion and the edge of the minor tongue defining a recess entrance smaller than the curled tab.

4,356,889

ADD-ON FORCED LUBRICATION SYSTEM

Terry E. Teeter, Mattawan, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 13, 1980, Ser. No. 177,703
Int. Cl.³ F16N 1/00
U.S. Cl. 184—6.12 15 Claims



1. An add-on forced lubrication system for a change gear transmission originally comprising a transmission housing defining an end wall and a lubricant sump, a first through bore located in the sump portion of the housing and adapted to be fitted with a removable first plug, a second through bore in the housing, a second removable plug adapted for normally sealing said second bore, a rotatable transmission shaft having an end located adjacent said end wall, a removable cover mounted to said end wall for sealing an opening provided in said end for providing access from the exterior of said housing to the end of said transmission shaft, said cover having an interface of specific configuration for interface with said end wall, said system comprising:

a drive adapter mountable to the end of said transmission shaft for rotation therewith, said drive adapter comprising a multipiece structure clampable to the end of said transmission shaft and defining a generally cup shaped body having an annular side wall portion for clampingly engaging the end of said transmission shaft and a bottom portion, said bottom portion having a nonannular opening therein;

a pump, said pump having a pump body with an interface substantially identical to the interface of said removable cover for mounting of said pump body to said end wall to seal said opening, said pump having a driven shaft adapted to be received in said nonannular opening in said drive adapter and to be driven thereby, said pump body further defining a pump inlet and a pump outlet;

a first lubricant fitting adapted to be received in said first bore;

a first lubricant conduit for providing fluid communication between said first lubricant fitting and said pump inlet;

a second lubricant fitting adapted to be received in said second bore; and

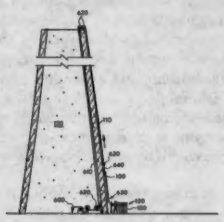
a second lubricant conduit for providing fluid communication between said pump outlet and said second lubricant fitting.

4,356,890

METHOD FOR INSTALLING AN ELEVATOR SYSTEM

Gerald D. Smart, 10240 Benton St., Broomfield, Colo. 80020

Filed Aug. 1, 1980, Ser. No. 174,670
Int. Cl.³ B66B 9/00
U.S. Cl. 187—6 2 Claims



1. A method for installing an elevator system on a wall of an elevated structure having a plurality of rail mast sections and an elevator car, said method comprising the steps of:

(a) raising the first rail mast section off the ground by a distance substantially equal to the length of said rail mast section,

(b) affixing the upper end of the next rail mast section to the bottom end of the first rail mast section,

(c) repeating steps (a) and (b) for each successive rail mast section until the first rail mast section is at the desired elevated position on the structure,

(d) raising the affixed rail mast sections the height of the elevator car,

(e) placing the elevator car under the raised rail mast sections,

(f) lowering the rail mast sections into the elevator car so that the rail mast sections operatively interconnect with the elevator car,

(g) raising the interconnected rail mast sections and elevator car,

(h) mounting a predetermined number of rail mast sections to the structure and to each other,

(i) interconnecting the lowermost rail mast section of said raised sections to the uppermost section of said mounted predetermined number of sections, and

(j) mounting each interconnected rail section to the structure by selectively raising the elevator.

4,356,891

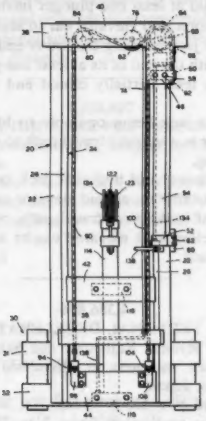
UPRIGHT FOR LIFT TRUCK

Richard J. Bartow, Athens, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation-in-part of Ser. No. 17,779, Mar. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 842,765, Oct. 17, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 28,308
Int. Cl.³ B66B 9/20
U.S. Cl. 187—9 E 12 Claims

1. In an upright structure for lift trucks and the like having a fixed upright section including transversely spaced vertical rails, a sole telescopic upright section including transversely spaced vertical rails mounted for elevation on said fixed section and elevatable load carrier means mounted for elevation on said telescopic section, the improvement comprising a sole asymmetric lift cylinder assembly mounted in the upright structure which is operatively connected to said telescopic section and which is supported from the fixed upright section at an elevated position and at one side thereof, first and second flexible lifting elements reeved on first and second wheel means and operatively connected to said cylinder assembly and to said fixed and telescopic upright sections, one end of each flexible lifting element being secured outwardly of one side only of the cylinder assembly, the other end of the first

flexible lifting element being secured to said telescopic section adjacent the adjacent side of the upright and the other end of the second flexible lifting element being secured to said telescopic section adjacent the opposite side of the upright, said other ends of said first and second flexible lifting elements being secured at locations substantially equidistant and on opposite sides of the longitudinal central vertical plane of the load carrier, said cylinder assembly together with said first and second flexible lifting elements being adapted to elevate said telescopic section relative to said fixed section, the lift cylinder



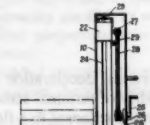
being located substantially at one side of the upright structure such that it projects at least partially into the area of interference by an adjacent vertical rail with the visibility of the operator from his normal line of sight through said adjacent vertical rail, and a second cylinder assembly for elevating said load carrier on said telescopic section independently of the elevation of said telescopic section on said fixed section by said asymmetric cylinder assembly, said first and second cylinder assemblies each having an effective stroke which is equal to approximately one-half the height of the collapsed upright structure.

4,356,892

MATERIAL DISPENSER

Robert A. Mossey, Cheyenne, Wyo., assignor to AMF Incorporated, White Plains, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,400
Int. Cl.³ B66B 9/20
U.S. Cl. 187—9 R **6 Claims**



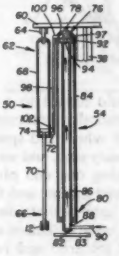
1. In a spring loaded material dispenser which is adapted to automatically ascend and descend as material is removed and added thereto, said dispenser including a vertically movable table suspended off the lower ends of a series of elongated tension springs, the upper ends of said springs being connected to a spring hanger, and manual means for lowering said hanger from a raised spring tensioned position to a spring de-tensioned position thereby lowering the table to a fixed loading position and for raising said hanger to tension said springs thereby urging said table to move vertically as material is removed and added thereto.

4,356,893

LOAD LIFTING CARRIAGE AND MAST ASSEMBLY

Richard J. Johannson, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US80/00413, § 371 Date Apr. 14, 1980, § 102(e) Date Apr. 14, 1980, PCT Pub. No. WO81/03014, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 14, 1980, Ser. No. 151,842
Int. Cl.³ B66B 9/20
U.S. Cl. 187—9 E **6 Claims**



1. An apparatus (**10**) for lifting a load, comprising:

(a) a mast (**16**) having outer sides (R, L) and having a first pair (**36, 38**) of uprights and a second pair (**20, 22**) of uprights, said first pair (**36, 38**) being movable relative to said second pair (**20, 22**);

(b) a load lifting carriage (**12**);

(c) a pair (**48, 50**) of free lift cylinders, each of said free lift cylinders (**48, 50**) including a jacket (**68**) connected to said first pair (**36, 38**) of uprights and a free lift piston rod (**70**) connected to said carriage (**12**);

(d) a pair (**52, 54**) of mast lift cylinders, each of said mast lift cylinders (**52, 54**) including a jacket (**84**) connected to said first pair (**36, 38**) of uprights and a mast lift piston rod (**86**) fixed to said second pair (**20, 22**) of uprights; and

(e) first and second means (**98**) for communicating fluid between one of said free lift cylinders (**48, 50**) and one of said mast lift cylinders (**52, 54**), respectively.

4,356,894

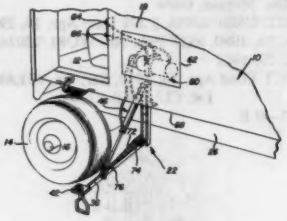
HIGH VEHICLE DRIVER MOUNT AND DISMOUNT LIFT

Kenneth Everett, 186 Rose Bud La., San Antonio, Tex. 78221

Filed Dec. 17, 1980, Ser. No. 217,416
Int. Cl.³ B66B 9/20
U.S. Cl. 187—9 R **6 Claims**

1. In combination with a tractor vehicle of the cab over engine type wherein the driver entrance and exit opening is disposed above a front wheel of the vehicle and said vehicle includes a stationary step generally centered above said wheel spaced at considerable height above the ground surface upon which the front wheel of the vehicle rests, and wherein the vehicle includes an elongated longitudinally extending side main frame member disposed at an elevation above and below a comfortable step up from the ground and a comfortable step up to the stationary step, a vertically elongated mount supported from said main frame member closely behind and inwardly of said front wheel and including upper and lower end portions projecting above and below said main frame member,

an elongated support arm having a first end portion pivotally supported from the lower end portion of said mount for angular displacement about a horizontal axis extending transversely of said arm and in a front-to-rear direction relative to said vehicle, said arm being swingable between a lowered downwardly and outwardly inclined position with the second end portion of said arm projecting downwardly and outwardly from said mount lower end portion behind and slightly outwardly of the outer side of said wheel and a raised position with said second end portion of said arm inclined upwardly



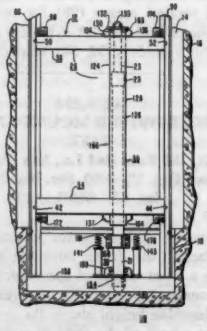
and outwardly from said mount to a level above said main frame member and generally horizontally aligned with the upper periphery of said wheel and spaced slightly below and rearward of said stationary step, and an extendible and retractable fluid cylinder having one end pivotally attached to the upper end portion of said mount and the other end pivotally anchored to said arm intermediate its first and second end portions and operative, upon extension and retraction, to swing said arm between said lowered and raised positions, respectively, the outer second end portion of said arm supporting an upwardly facing step member therefrom.

4,356,895

ELEVATOR SYSTEM

George A. Kappenhagen, Stroud Township, Monroe County; Niles J. Martin, Bonneauville; John E. Pace, York; Robert A. Sette, Gettysburg; Charles E. Randall, Boiling Springs; Leigh F. Jackson, Guilford Township, Franklin County, and Gurdip S. Bains, Bonneauville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,103
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—17 **8 Claims**



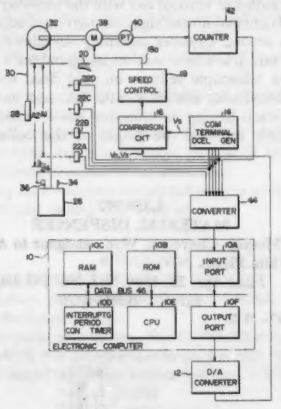
1. An elevator system, comprising:
a building having vertically spaced floors and a hatchway,
an elevator car in said hatchway, said elevator car including a platform, a cab on said platform having an entranceway and side wall and top portions, and structural support means for said cab platform,
said support means including a car frame having a lower beam member below the platform, an upper beam member above the cab, and a hollow elongated member which extends between and is fixed to at least one of said lower and upper beam members, said elongated member having upper and lower ends, with its upper end being at least partially closed,
and a single hydraulic jack at the bottom of said hatchway, within the vertical projection of said elevator car, said hydraulic jack including a cylinder and at least one plunger, with said cylinder being secured to said building, and with said at least one plunger having an end portion which supports said elevator car in said hatchway,
said hydraulic jack entering the lower end of said elongated member, with the end of its at least one plunger in contact with the at least partially closed end of said elongated member,
said hydraulic jack being operable to lift and lower said elevator car in a vertical travel path to serve the floors of said building,
at least a portion of said hydraulic jack extending upwardly into said elevator car as said elevator car travels between the limits of its vertical travel path, reducing the space required below said elevator car to accommodate said hydraulic jack.

4,356,896

ELEVATOR TERMINAL DECELERATION SYSTEM

Koichi Tamura; Ryuichi Kajiyama, and Shigemi Iwata, all of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1980, Ser. No. 208,129
Claims priority, application Japan, Nov. 28, 1979, 54-154107
Int. Cl.³ B66B *1/30*
U.S. Cl. 187—29 R **1 Claim**



1. An elevator terminal deceleration system comprising an elevator car, a plurality of terminal sensors disposed at predetermined equal intervals adjacent to a floor terminal within an associated hoistway, counter for counting pulses corresponding to a distance of movement of said elevator car means responsive to said elevator car reaching a predetermined distance short of said terminal floor to receive a count from said counter means, to subtract said count from said predetermined magnitude preliminarily stored therein to calculate a residual distance between the actual position of the elevator car and said terminal floor, and to generate a command normal deceleration signal having a magnitude successively decreased in accordance with said residual distance, command terminal deceleration generator means responsive to the successive engagement or said elevator car with said plurality of terminal

sensors during the approach of said elevator car to said terminal floor to generate a command terminal deceleration signal having a magnitude successively decreased in accordance with the actual position of said elevator car and always higher than that of said command normal deceleration signal, and a command auxiliary terminal deceleration generator means responsive to the engagement of said elevator car with any of said terminal sensors to receive said count from said counter means to subtract said count from a distance between the engaged terminal sensor and said terminal floor, to calculate a residual distance between the actual position of said elevator car and said terminal floor and to generate a command auxiliary terminal deceleration signal successively decreased in accordance with said residual distance.

4,356,897

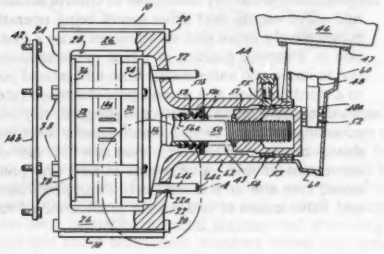
WEAR INDICATOR FOR DISC BRAKES

John A. Urban, Livonia, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 151,008, May 19, 1980, abandoned, which is a continuation of Ser. No. 974,283, Dec. 29, 1978, abandoned. This application Oct. 9, 1981, Ser. No. 309,878

Int. Cl.³ F16D *66/02*

U.S. Cl. 188—1.11 **4 Claims**



1. A vehicular disc brake comprising:

(A) a housing structure including

(1) a caliper housing section adapted to carry inboard and outboard pads for coaction with the opposite faces of a disc secured to a wheel of an associated vehicle and including inboard and outboard web portions disposed generally normal to the wheel axis of the associated vehicle on opposite sides of the disc, and

(2) a generally tubular housing section extending radially inwardly from the inboard face of said inboard web portion for a distance substantially greater than the combined thickness of fresh inboard and outboard pads;

(B) a push rod mounted slideably within said tubular section for reciprocal brake apply and release movement along a line of action generally parallel to said axis and having a free, outboard end projecting into an aperture in said inboard web portion;

(C) a coacting threaded member threadably engaging said push rod at a location thereon inboard of said outboard end;

(D) a bridge bar on the free outboard end of said push rod forming a T-configuration with the push rod and adapted to press the inboard brake pad against the inboard face of the disc in response to brake apply movement of said push rod;

(E) means defining a pair of generally axially extending through bores in said inboard web portion on opposite sides of said tubular housing section; and

(F) a pair of pins secured at their outboard ends to laterally spaced locations on said bridge bar and extending axially therefrom respectively through said bores to project their inboard ends axially inwardly from the inboard face of said inboard web portion at opposite sides of said tubular housing section for a distance generally equivalent to the combined thickness of said fresh inboard and outboard pads whereby to provide, as a function of the length of pin exposed, a measure of the remaining thickness of the brake pads, further provide a means of precluding rotation of said push rod to enable axial movement of said push rod in response to rotation of said coacting threaded member, and further provide bearing support for the outboard end of said push rod.

4,356,898

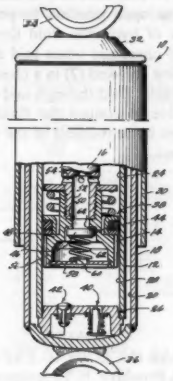
VALVE ASSEMBLY AND REDUCED HARSHNESS SHOCK ABSORBER EMBODYING THE SAME

Shapoor B. Guzder, Deerfield, and Eugene N. Zavodny, Bloomingdale, both of Ill., assignors to Maremont Corporation, Carol Stream, Ill.

Filed Nov. 20, 1979, Ser. No. 96,155

Int. Cl.³ F16F *9/50*

U.S. Cl. 188—280 **7 Claims**



1. A shock absorber comprising:

a cylinder member;

a piston assembly having an axis aligned with the axis of said cylinder member;

a piston rod fixed to said piston assembly and extending axially therefrom outwardly of one end of said cylinder member disposed upwardly when said shock absorber is operatively mounted;

an intermediate tube surrounding said cylinder member, the interior of which defines with the exterior of said cylinder member an annular reservoir chamber;

the portion of said cylinder member above the piston assembly constituting a rebound chamber the volume of which is variable depending upon the position of said piston assembly within said cylinder member;

a base and end cap assembly fixedly connecting the lower end of said cylinder member and said intermediate tube so as to define the lower end of a compression chamber within said cylinder member the upper end of which is defined by the piston assembly and the volume of which is variable depending upon the position of said piston assembly within said cylinder member;

hydraulic fluid filling said rebound and compression chambers and partially filling said reservoir chamber;

restricted fluid flow control means on the exterior periphery of said piston assembly cooperable with the interior periphery of said cylinder member providing for controlled restricted flow of hydraulic fluid between said compression chamber and said rebound chamber during the movement of said piston member within said cylinder member;

base valve means in said base and end cap assembly providing for controlled flow of hydraulic fluid from said com-

pression chamber to said reservoir chamber during a compression movement of said piston member toward said other end of said cylinder member;

replenishing valve means in said base and end cap assembly for enabling hydraulic fluid to flow from said reservoir chamber to said compression chamber during a rebound movement of said piston assembly toward said one end of said cylinder member;

said piston assembly having a central opening therein communicating at its upper end with said rebound chamber and having at its lower end a downwardly facing annular valve seat surrounding the lower end of said opening;

a rebound control disk valve disposed below said annular valve seat, said disk valve operable for movement into and out of sealing engagement with said valve seat; and

spring means carried by said piston assembly resiliently urging said disk valve into engagement with said valve seat, the improvement wherein:

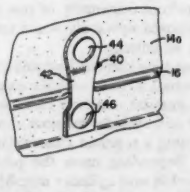
said rebound control disk valve includes normally open valve means formed interiorly in said disk valve and operable (1) in an open position to permit relatively unrestricted flow of hydraulic fluid through said disk valve between said chambers when said disk valve is engaged with said valve seat and (2) in a closed position to restrict flow of hydraulic fluid through said disk valve permitting said disk valve to control the fluid movement between said chambers by movement of the disk valve relative to said valve seat.

4,356,899

ATTACHE CASE INCLUDING EXPANSION GUSSET

Abraham I. Tawil, Brooklyn, N.Y., assignor to H.I.T. Industries, Ltd., Avenel, N.J.

Filed Oct. 20, 1980, Ser. No. 198,655
Int. Cl.[3] A45C *3/02, 7/00*
U.S. Cl. 190—44 7 Claims



1. An attache case, comprising:

first and second sections relatively movable with respect to each other for opening and closing said case;

at least one of said first and second sections including expansion means for expanding the capacity of said case, said expansion means being movable between a closed position and an expanded position;

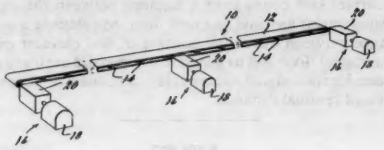
a plurality of fastening means disposed about said case for releasably maintaining said expanding means in said closed position, each of said fastening means including a strap and a first releasable fastener on a first side of said expansion means and a second releasable fastener on a second side of said expansion means so that at least one of said first and second fasteners of each of said fastening means is released when said expansion means moves to said expanded position.

4,356,900

DRIVE SYSTEM

Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Co., Warren, Mich.

Filed Jul. 14, 1980, Ser. No. 168,538
Int. Cl.[3] B60K *41/02*
U.S. Cl. 192—0.02 R 27 Claims



1. A drive system comprising:

driven means;

motor means;

fluid actuated clutch means selectively actuable to drivingly connect said motor means to said driven means; and

control means for controlling the actuation of said clutch means, said control means including

pressure relief fluid control valve means; and

drive means operatively connected to control actuation of said valve means, said drive means being operative to progressively move said valve means from a first position to a second position at a first predetermined rate and to move said valve means from said second position to a third position at a second predetermined rate,

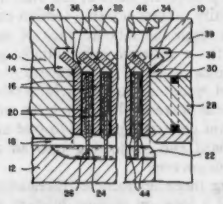
said valve means being operative to progressively increase actuating pressure to said clutch means whereby said driven means may be accelerated at a first rate during movement of said valve means at said first predetermined rate and at a second rate during movement of said valve means at said second predetermined rate.

4,356,901

SUPPORT FOR A SERIES OF FRICTION DISCS

Daniel L. Koehler, Troy, Mich., and Walter O. Zajac, Oshkosh, Wis., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 15, 1980, Ser. No. 187,386
Int. Cl.[3] F16D *13/52*
U.S. Cl. 192—70.2 8 Claims



1. An improved support for a series of three or more friction discs within a housing of a clutch, brake, or the like of the type which includes a central member mounted for rotation relative to said housing, said central member having a series of reaction discs mounted for rotation therewith, said reaction discs being alternatively disposed between said friction discs, and means for applying an axial force to said series of said friction discs and said series of said reaction discs to product frictional forces therebetween tending to reduce relative rotation between said housing and said central member, said improved support comprising:

each of said friction discs being identical and including

means thereon for coupling said each said friction discs directly to an adjacent said friction disc to positively prevent relative rotation therebetween; and

means for coupling said friction disc of said series located at at least one end thereof to a portion of said housing to positively prevent relative rotation therebetween.

4,356,902

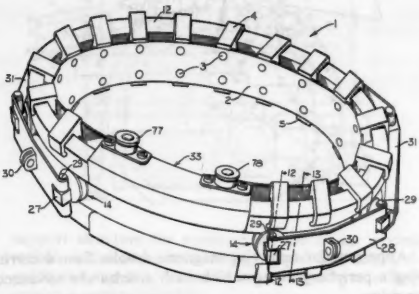
BEARING AND SUPPORT

Raymond J. Murphy, Rte. 2, Bonne Terre, Mo. 63020

Division of Ser. No. 842,532, Oct. 17, 1977, Pat. No. 4,204,719. This application Mar. 28, 1980, Ser. No. 135,196

Int. Cl.³ B65G *13/00*

U.S. Cl. 193—35 R **2 Claims**



1. A dolly for use in transferring material upon a surface, said dolly including a frame member, a series of bearings rotatively disposed with respect to the frame member, said frame member surrounding the periphery of said bearings, each bearing comprising a pair of rotatable members, said pair of members being rotatable about a common axis, a shaft having the said members rotatably mounted thereon and providing the common axis about which said members rotate, one member capable of simultaneously rotating in an opposite direction from the other member, a bearing means arranged intermediate the rotatable members and their shaft to facilitate the turning of said members therearound, the shaft of each bearing being secured to the frame member, the shafts of each bearing member being angularly disposed with respect to each other and the said frame member, the angular disposition of said shafts providing for the higher locating of one rotatable member with respect to the other rotatable member mounted upon the same shaft, whereby one rotatable member of each bearing being provided for movement upon the surface while the other rotatable member of each bearing being arranged for providing movement of materials disposed thereupon.

4,356,903

PARKING METER

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840, and Christian Grund, 2035 Burr Ave., The Bronx, N.Y. 10461

Filed Oct. 12, 1979, Ser. No. 84,427

Int. Cl.³ G06F *9/00*

U.S. Cl. 194—1 R **7 Claims**

1. An electronic parking meter comprising in combination:

a housing,

a support for supporting said housing,

an electrically operated numerical display secured to said housing and viewable from the exterior of said housing,

coin receiving means for receiving and passing a plurality of coins of different denomination into said housing and storage means within said housing for coins received thereby,

a source of electrical energy supported within said housing,

electrical circuit means supported within said housing comprising:

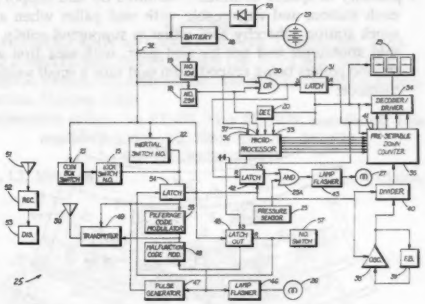
(a) a computer in the form of an electronic microprocessor having a plurality of inputs thereto and a plurality of output circuits extending therefrom,

(b) a plurality of normally open coin detection switches each operable to be closed upon insertion of a coin into said housing of a specific denomination and each operable to pass a signal, when closed, from said electrical energy source to a respective input to said electronic microprocessor,

(c) said microprocessor containing circuit means responsive to signals generated by respective of said normally open coin detection switches and operable thereafter for generating digital code signals on a plurality of its outputs which code signals are indicative of the value of the coins presented to said coin receiving means,

(d) a preset counter connected to receive digital code signals generated by said electronic microprocessor and operatively set thereby in accordance with the value of the coins presented to said coin receiving means as determined by the number of times each of said normally open switches are closed,

(e) an attendant oscillator for causing said counter to



uncount after being set to a specific value by coins presented to said housing,

(f) said counter having a plurality of outputs,

(g) a decoder-driver for said electronic numerical display connected to said plurality of outputs of said counter and operably connected to said electronic digital display to cause said display to display numerical indications of the time determined by the remaining count in said counter,

(h) signal generating means operable when said counter uncounts for generating a control signal, and

(i) indicating means connected to receive said control signal and controlled thereby to indicate that the time on the meter has run out, and

(j) alarm means located remote from said meter, code generating means for generating a code indicative of the location of said meter and short wave transmitting means connected to said code generating means and operable in response to said control signal to short wave transmit the code generated by said code generating means indicative of the location of said meter when said counter has run out.

4,356,904

MACHINE TOOL

Andrew V. Siarto, 46035 Grand River Ave., Novi, Mich. 48050

Continuation-in-part of Ser. No. 33,638, Apr. 26, 1979, Pat. No. 4,157,513. This application Jul. 2, 1980, Ser. No. 165,426

Int. Cl.³ B65G *21/00*

U.S. Cl. 198—345 **19 Claims**

1. In a machine tool, a circular support having an upper

support surface and comprising a series of separable arcuate sectors with radial ends;

an annular gear overlying and being spaced from said support surface;

a plurality of rollers carried by said support and engaging the undersurface of said gear to support the gear for rotation about a vertical axis;

first and second annular rails on said support surface, one rail on each side of said gear;

said first rail having a cam surface;

there being a plurality of spaced work stations located around said support;

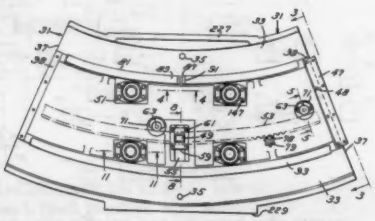
a pallet for supporting a workpiece and movable through said work stations;

means connecting said pallet to said gear for rotational movement, yet accommodating limited relative vertical and horizontal movement therebetween;

a first roller carried by the underside of said pallet intermediate its ends on one side thereof and engageable with said first rail;

a pair of longitudinally spaced second rollers carried by the underside of said pallet adjacent its ends upon the other side thereof and engageable with said second rail;

a plurality of spaced abutments mounted on said support at each station, and engageable with said pallet when at a work station whereby said pallet is supported solely by said abutments and not by said gear, with said first and second rollers being spaced from said rails a small vertical distance;



clamping means carried by said support engageable with said pallet for clamping the pallet to said abutments when at a work station;

indexing means on said support for rotating said gear and thereby moving said pallet between work stations, whereby said first rail cams said first roller upwardly thereby lifting the corresponding edge of said parallel to a transfer position and lowering said second rollers to engage said second rail, and said pallet being lifted out of engagement with said abutments, resulting in the pallet and its workpiece being carried by said rails and not by said gear, as said gear is rotated to move said pallet to the next work station;

radial depending end flanges at the ends of each sector, said sectors being arranged end to end in a circle, the end flanges of adjacent sectors being in lateral engagement;

opposite ends of each sector having upwardly opening radial recesses defining a ledge;

a radial spanner plate nested upon ledges between a pair of adjacent sectors;

and fasteners securing said spanner plates to said sectors respectively;

said rails comprising a series of arcuate sectors arranged end to end and interconnected;

a pair of aligned sectors of said first rail at each work station having end portions spaced apart;

said end portions being recessed downwardly defining a cam recess in said first rail at said stations vertically spaced from and loosely receiving said first roller spacing said roller from said first rail;

downward movement of said first roller partly into said cam recess tilting said pallet and lifting the corresponding second rollers above said second rail.

4,356,905

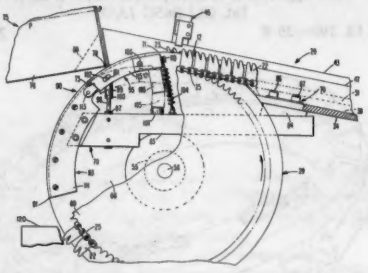
REMOVING MAGNETIC ARTICLES FROM A CARRIER

Donald M. Large, Temple, Pa., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,302

Int. Cl.³ B65G *17/46, 47/46*

U.S. Cl. 198—366 **16 Claims**



1. Apparatus for removing magnetic articles from a carrier having a periphery along which such articles are advanced, comprising:

means for magnetically removing the articles from a first location along the periphery of the carrier;

means for removing the articles from a second location along the periphery of the carrier; and

a retention mechanism at a first position within the periphery and supported independently of movement of the carrier, said mechanism having means for magnetically retaining the articles on the carrier when at least a portion of such mechanism is optionally moved to a second position adjacent to the periphery and supported independently of movement of the carrier such that the articles are advanced along the mechanism and are thereby retained on the carrier along and beyond the first location to the second location.

4,356,906

COLLATING UNIT FOR BAGGED PRODUCTS AND THE LIKE

David M. Fallas, 6906 Woodway, Waco, Tex. 76710

Filed Sep. 22, 1980, Ser. No. 189,319

Int. Cl.³ B65B *35/26*

U.S. Cl. 198—413 **9 Claims**

1. Apparatus for orienting a plurality of articles arriving at said apparatus, comprising:

(a) a support structure for sequentially receiving said articles, said support structure comprising a plurality of spaced-apart elements;

(b) means for producing an actuation signal in response to the presence of an article on said supporting structure;

(c) a clutch operable in response to said actuation signal and powered by driving means;

(d) a driven shaft, rotatable by said clutch;

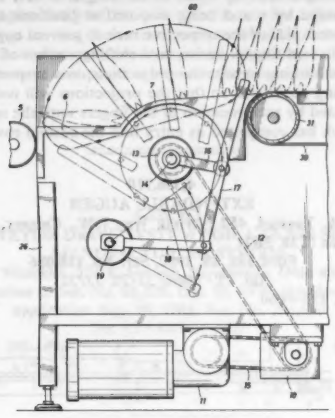
(e) a rotating arm connected to said driven shaft and oriented transversely to the axis of said driven shaft;

(f) a flipper arm rotatably connected to said rotating arm, for contacting said article by passing through the space between said spaced-apart elements of said support structure, and for lifting said article to a substantially vertical position juxtaposed to other such articles;

(g) means for retracting said flipper arm below the level of said support structure, and for retaining said flipper arm

below said support structure until the next occurrence of said actuation signal; and

(h) a curved, raised portion operatively associated with said



support structure for arresting motion of an incoming article; said raised portion being shaped and disposed to guide and support the article when lifted by the flipper arm to a vertical position.

4,356,907

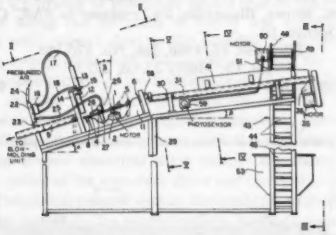
MACHINE FOR DISTRIBUTING GROUPS OF WORKPIECES TO DIFFERENT DESTINATIONS

Samuel S. Aidlin, 214 Beaumont St., Brooklyn, N.Y. 11235, and Stephen H. Aidlin, 934 Glenwood Rd., West Hempstead, N.Y. 11552

Continuation of Ser. No. 877,703, Feb. 14, 1978, abandoned. This application Apr. 30, 1981, Ser. No. 259,098

Int. Cl.³ B65G *47/26, 47/84, 47/12*

U.S. Cl. 198—427 **7 Claims**



1. A machine for distributing groups of workpieces among different destinations, said workpieces having elongate stems topped by enlarged heads, comprising:

a turntable inclined at an acute angle to the horizontal and provided with a multiplicity of peripheral recesses each adapted to receive one of said workpieces;

drive means for intermittently rotating said turntable to align said recesses successively with a loading point confronting an elevated edge of said turntable and with a plurality of unloading points confronting a depressed edge of said turntable;

feed means terminating at said loading point for emplacing a series of workpieces in a generally upright position, suspended by their heads from the upper turntable surface, in recesses successively aligned therewith;

a guard rail paralleling the periphery of said turntable between said loading point and said unloading points for retaining said workpieces in said recesses;

a plurality of guide channels for the heads of said workpieces, said guide channels being provided with head-supporting surfaces lying substantially in the plane of said turntable and extending from said unloading points to respective destinations of workpieces entrained by said turntable from said loading point; and

discharge means operatively linked with said drive means for concurrently transferring a plurality of workpieces, received in recesses halted at said unloading points, to the corresponding guide channels for conveyance to their destinations, said discharge means including an arcuate barrier forming a continuation of said guard rail between said turntable and said guide channels, pneumatic actuating means connected to a source of compressed air for temporarily withdrawing said barrier upon a halting of said turntable in a position of alignment of a workpiece-holding recess with each of said guide channels, and a set of nozzles connected to said source of compressed air for driving the workpieces from said recesses into said guide channels.

4,356,908

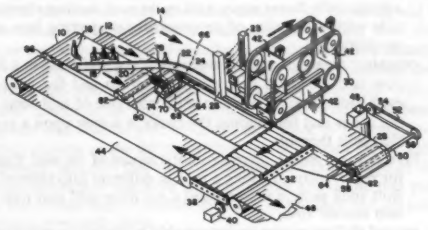
METHOD AND APPARATUS FOR ALIGNING AND SEPARATING CONTAINERS OF DIVERSE SHAPES

Joseph J. Embro, Jr., Atlanta, Ga., assignor to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 42,469, May 25, 1979, abandoned. This application Mar. 12, 1981, Ser. No. 242,872

Int. Cl.³ B65G *47/31*

U.S. Cl. 198—461 **5 Claims**



1. Method of aligning and separating a diverse group of generally rectangular cartons and generally smaller cylindrical containers, comprising the steps of:

(1) placing said cartons and containers at random positions on a first conveyor having a portion thereof in side-by-side relation with a second conveyor;

(2) conveying said cartons and containers forwardly on said first conveyor toward a fixed guide rail extending angularly across said first conveyor at an angle such that a container which is initially positioned closely behind a carton will engage the carton and travel clear of said carton while said carton moves along said guide rail and before the carton leaves said first conveyor,

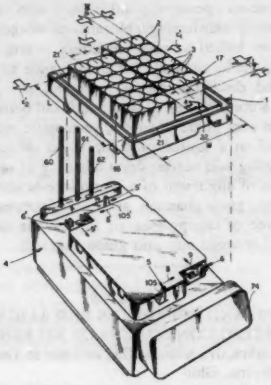
(3) moving said second conveyor forwardly at a higher speed than said first conveyor said second conveyor having a width which is narrower than the narrowest dimension of any of said cartons and wherein said guide rail extends across the full extent of said second conveyor, and;

(4) moving a third conveyor forwardly through the discharge region of said guide rail at a higher speed than said second conveyor, for conveying said cartons and containers, said cartons being transferred from said first conveyor onto said third conveyor and said containers being transferred from said first conveyor to said second conveyor and then to said third conveyor.

4,356,909
FRACTION COLLECTOR

Dan November, Kew Gardens, N.Y., and Robert Adler, Montville, N.J., assignors to Buchler Instruments, Inc., Fort Lee, N.J.

Filed Jul. 18, 1980, Ser. No. 170,965
Int. Cl.³ B65G 37/00
U.S. Cl. 198—472 4 Claims



1. A fraction collector comprising:

a frame;

an interchangeable plurality of elongate racks each including receptacle means for retaining a plurality of tubes in a substantially linear array, said racks each having a bottom side with a plurality of downwardly projecting lugs and projections;

container means on said frame for holding said racks in a first row and a second row parallel thereto and for guiding each rack during a position shift from one of said rows to the other and for guiding the racks in a row upon a position shift thereof;

first shifting means reciprocatably mounted on said frame for recurrently engaging a rack at different lugs thereof to shift such rack in incremental steps from said first row to said second row;

second shifting means reciprocatably mounted on said frame for engaging at least one projection of a rack upon a moving thereof by said first shifting means from said first row to said second row and for pushing such rack to shift said second row parallel to said first row;

third shifting means for moving a rack from said second row to said first row upon a shift of said second row by said second shifting means;

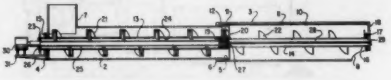
fourth shifting means for moving said first row parallel to said second row upon a shifting of a rack from same to said first row; and

drive means on said frame for operating synchronously said shifting means and for actuating said first shifting means to execute rack-shifting strokes in alternation with row-shifting strokes of said second shifting means, each rack being adapted to carry n tubes and having n equispaced downwardly projecting lugs for coacting with said first shifting means to move the respective rack in n incremental steps from said first row to said second row, each of said racks having a long side and a short side and at least two spaced projections for coacting with said second shifting means to move said second row by a distance equal to the length of said short side, said projections being disposed at a pre-established distance from said long side to ensure that said second shifting means engages said projections only during a predetermined portion of a row-shifting stroke, said second shifting means including a pair of vertical fingers for engaging the projections of a respective rack upon completed entry thereby into said second row under the action of said first shifting means, said fingers being attached to a member movably mounted on said frame below said container means, the lugs on a respective rack having a spacing equal to the length of said long side divided by n and being disposed at positions along the bottom side of the respective rack to prevent engagement with said fingers during row-shifting strokes of said second shifting means, the projections on a respective rack being positioned so that the projections will not be contacted by reciprocation of the fingers until the respective rack has completed its entry into the second row.

4,356,910
EXTENDABLE AUGER

Frank A. Togstad, 452 Norfolk Way NW., Calgary, Alberta, Canada (T2K 5R1)

Filed Jan. 28, 1980, Ser. No. 116,086
Int. Cl.³ B65G 33/26, 33/32
U.S. Cl. 198—660 5 Claims



1. An extensible auger for granular material, said auger including casing means and first and second interconnected hollow shaft means rotatable in said casing means; a hollow helical first auger flight on said first shaft means opening into the interior of said first shaft means; a helical second auger flight on said second shaft means extending into said first hollow auger flight between retracted and extended positions; first drive means positioned within and separate from said first and second shaft means, for moving said first and second shaft means and said auger flights between extended and retracted positioned, second drive means for rotating said first and second flights simultaneously in said casing means.

4,356,911
LINEAR DRIVE UNIT FOR VIBRATORY CONVEYOR

William R. Brown, Blairsville, Pa., assignor to FMC Corporation, Chicago, Ill.

Filed Jul. 18, 1980, Ser. No. 170,248
Int. Cl.³ B65G 27/08, 27/24
U.S. Cl. 198—766 9 Claims

1. In a linear drive unit for a vibratory conveyor that can be mounted to a fixed support, said drive unit comprising an elongated base that extends longitudinally of the conveyor for resiliently mounting to the fixed support, a trough support disposed parallel to the base, a plurality of leaf springs interconnecting the base and the trough support at location spaced longitudinally thereof, and a driver arranged to move the trough support longitudinally of the conveyor and relative to the base, the improvement comprising said base and said

trough support being disposed laterally of each other in a horizontal plane, said leaf spring in an at rest position extending transversely between the base and the trough support in a direction generally perpendicular to the direction of linear drive longitudinally of the conveyor, means for adjusting the leaf springs to vary the vertical movement of the trough support without changing the direction in which the leaf springs extend in an at rest position between the base and the trough support.

4,356,912

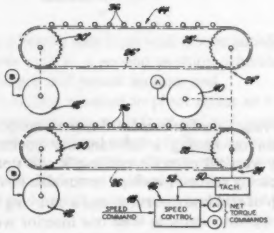
CONVEYOR DRIVE SYSTEM FOR A GLASS SHEET MANUFACTURING SYSTEM

John S. Nitschke, 324 E. Second, Perrysburg, Ohio 43551

Continuation of Ser. No. 86,228, Oct. 18, 1979, abandoned. This application Aug. 10, 1981, Ser. No. 291,610

Int. Cl.³ B65G *13/07*

U.S. Cl. 198—790 **5 Claims**



1. In a conveyor drive system for transporting a sheet glass load through a glass processing station along a direction of travel of the type having: a conveyor drive defined by at least one continuous drive loop trained over first and second pulleys mounted at opposite ends of a lateral side of the processing station; a plurality of elongated rollers spaced apart from one another along the direction of travel and extending transversely with respect thereto, the plurality of rollers being in driving engagement with the conveyor drive for rotational motion upon motion of the continuous drive loop; first torque means, coupled to the first pulley of the conveyor drive and responsive to a first control signal, for applying a drive torque to the first pulley in accordance with the first control signal; first and second electrical drive motors associated with the second pulley of the conveyor drive and responsive to first and second electrical control signals, for applying a resultant counter-drive torque to the second pulley; feedback means associated with the first torque means for producing a feedback signal representative of the rotational speed of the first pulley; an improved control circuit, wherein said control circuit is responsive to a transport speed command signal and the feedback signal, for providing the first control signal to drive the first pulley in accordance with the transport speed command, said control circuit including first and second electrical channel circuits for providing the first and second electrical control signals, respectively, and first and second electrical feedback circuits coupled, respectively, to the first and second electrical drive motors and the first and second electrical channel circuits for providing first and second electrical feedback signals related to an electrical characteristic of the first and second electrical drive motors, respectively, wherein said first and second electrical channel circuits are responsive to said first and second electrical feedback signal for the purpose of stabilizing the motion of the conveyor drive.

4,356,913

PACKING FOR A SHELL WITH A CASE, HAVING BETWEEN THIS LATTER AND THE FRONT PART OF THE SHELL A CURVED PART OF SMALLER DIAMETER

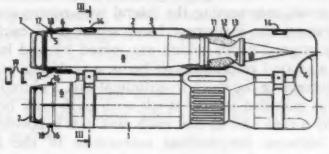
Gerard Moraine, 36, Rue Mortial Boudet, 92370 Chaville, France

Filed Mar. 6, 1981, Ser. No. 241,129

Claims priority, application France, Mar. 10, 1980, 80 05308

Int. Cl.³ F42B *37/00*

U.S. Cl. 206—3 **4 Claims**



1. A packing for a shell having a case and between the case and the front part of the shell a curved part of smaller diameter, said packing comprising a container made from plastic material having an open end opposite that of the front part of the shell, said open end being adapted to be closed by means of a sealing lid, said container having an inner surface comprising at least one conical part having a conicity directed towards the front part of the shell for limiting the amount the shell is driven into the container when the rear part of the shell is urged forwards by closing of the lid, two molded half-sheaths made from polyureathane, for example, having inner surfaces mating with the outer surfaces of the front of the case and of the rear part of the curved part of smaller diameter of the shell, and a tube fitted over said two half-sheaths and mating with the outer surfaces of said half-sheaths to maintain the half-sheaths in position, said tube having a front part which is conical and middle and rear parts which are cylindrical or conical with a lesser conicity, so that said tube's conical front part bears against said conical part of the inner surface of the container when closing of the lid pushes the rear of the case of the shell forward, said two half-sheaths assuming the exact shape of the outer surfaces of the front part of the case and of the rear part of the curved part of smaller diameter of the shell and the tube which surrounds them.

4,356,914

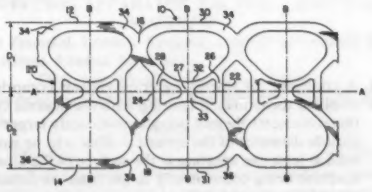
ASYMMETRIC CONTAINER CARRIER STOCK

Robert C. Olsen, Streamwood, and William N. Weaver, Northbrook, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 5, 1979, Ser. No. 100,681

Int. Cl.³ B65D *75/00*

U.S. Cl. 206—150 **6 Claims**



1. Asymmetric carrier stock for machine application to a plurality of rows of substantially identical containers, said stock formed from a resilient, deformable plastic sheet material of uniform thickness, comprising a plurality of longitudinally and laterally directed and aligned, rows and ranks respectively, integrally joined, container encircling bands, each of said

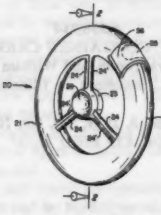
bands defining an aperture of predetermined shape and circumferential dimension, the predetermined circumferential dimensions of each of the bands being generally equal and less than a predetermined outer circumferential dimension of containers intended to be associated therewith, each longitudinally adjacent pair of bands being joined by longitudinal web means, the longitudinally adjacent pair of bands being uniformly spaced by the longitudinal web means for selective severance transverse the stock through any selected pair of longitudinal web means, each laterally adjacent pair of bands being joined by lateral web means, two different, intersecting reference axes created in the stock, a first reference axis being a longitudinal axis defined as extending along the stock, parallel to the longitudinal rows, intersecting the lateral web means and equidistant between the innermost band segment of each rank of laterally aligned bands which are joined by said lateral web means, a second reference axis being a rank axis perpendicularly intersecting the stock longitudinal axis, a plurality of such rank axes included in said stock with each rank being intersected by a rank axis so that each rank axis is positioned equidistant between longitudinal extremities of the associated bands therein, each successive rank in said stock being identical in configuration and each successive band in a given row of bands being identical in configuration, said first reference axes separating opposing, nonsymmetrical regions of the carrier stock, whereby the stock is particularly designed for use in machine applications which utilize nonsymmetrical application forces.

4,356,915

CONTAINER FOR SPHERICAL OBJECTS

William L. Phillips, 1691 E. Weber Rd., Columbus, Ohio 43211

Filed Oct. 9, 1981, Ser. No. 310,298
Int. Cl.³ B65D *85/00*
U.S. Cl. 206—315 B **7 Claims**



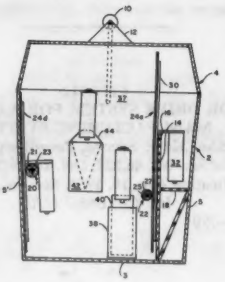
1. A container for storing spherical objects comprising:
a. a hollow torus-shaped housing with the internal cross-sectional diameter thereof being conveniently larger than the outside diameter of the spherical objects to be stored, and with at least one aperture in the surface of the housing, the aperture being conveniently larger than the outside diameter of the objects; and
b. a closure member constructed to fit over and cover the aperture to prevent the passage of spherical objects stored within the hollow of the housing to the outside, and movable to uncover the aperture for the admission and removal of the spherical objects to and from the interior of the housing.

4,356,916

CARRYING CASE FOR CEMENT FINISHER'S TOOLS

Edward B. Anglemyer, P.O. Box 777, Monroe, Wash. 98272

Filed Jan. 21, 1981, Ser. No. 226,584
Int. Cl.³ A45C *11/00*; B65D *85/00*
U.S. Cl. 206—372 **9 Claims**



1. A carrying case for cement finisher's tools comprising a body portion on having a substantially horizontal bottom, substantially vertical exterior end walls and upright exterior side walls joining said end walls; a removable cover adapted to close the top of said body portion; and a carrying bail pivotally secured to opposite walls; at least one interior wall parallel to and spaced inwardly at least 3 inches from one of said exterior walls; and a horizontal shelf member joining said interior wall with the last-named exterior wall, said interior wall being much closer to said last-named exterior wall than to the wall opposite thereto and extending several inches upwardly from said shelf, said interior wall and shelf being to constructed and arranged that a cement finisher's finishing trowel can be hung on said interior wall with the handle between said exterior an interior walls, and means adjacent the inner surface of said interior wall constructed and arranged to stabilize the blade of such a trowel against said interior wall when it is so hung, said surface being otherwise unobstructed.

4,356,917

Patent Not Issued For This Number

4,356,918

DISC STORAGE CONTAINER

Henry Kahle, Irvine; Jeffrey R. Menkes, El Toro, and Dean L. Christensen, Long Beach, all of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

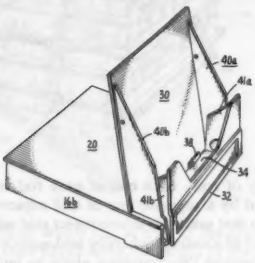
Filed Apr. 21, 1981, Ser. No. 256,101
Int. Cl.³ B65D *85/30*
U.S. Cl. 206—444 **8 Claims**

1. A storage container adapted to hold a plurality of substantially planar members, said container comprising:
a base section comprising a pair of side walls of substantially equal length, a first end wall connected with each of said side walls at one end thereof, a bottom wall connected with said first end wall and said side walls, said bottom wall extending for only a portion of the length of said side

walls terminating at one end, with said side walls extending freely beyond said one end of said bottom wall;

a pouch section adapted to hold said planar flexible members, said section comprising a cover wall, a second end wall and a partial front wall;

said front wall adapted to pivot about an axis, from a first



position whereby said front wall is substantially parallel to said cover wall to a second position whereby said front wall enlarges said pouch section; and

said pouch section adapted to pivot about an axis near said other end of said side walls from a closed position wherein said pouch is confined substantially in a region defined by said side walls, first end wall and bottom wall, with said cover wall enclosing said region, to an open position wherein said pouch section rests against said base section.

4,356,919

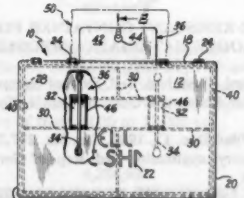
HANG HOLE DEVICE FOR DISPLAY OF PACKAGE

Arthur Matney, 360 Furman St., Brooklyn, N.Y. 11201

Filed Apr. 23, 1981, Ser. No. 262,440

Int. Cl.³ B65D *73/00*

U.S. Cl. 206—470 **9 Claims**



1. A hang hole device for display of a two hinged cosmetic package having walls, a top, a bottom and a front catch means comprising a flat sheet having a thickness adapted to pass between the top and bottom of the package;

said flat sheet having sides and a front portion cut to fit constituting a body portion within the walls of the package thereby providing a similar contour to the package;

said flat sheet having a back portion protruding from the back of the package between the top and bottom thereof and between two adjacent hinges to form a tongue adapted to hand said package on a display stand with the sheet in place;

the width of said tongue being slightly less than the distance between the two adjacent hinges;

said tongue including a hole in a center portion thereof to suspend the package from a display hook with the catch closed solely by said tongue; and said body portion providing means to accommodate an applicator for applying a cosmetic contained in the package for use by a purchaser, said applicator being protected at its ends by said body portion.

4,356,920

METHOD AND APPARATUS FOR GRADING AND FURTHER PROCESSING EGGS

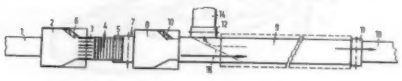
Jelle van der Schoot, Aalten, Netherlands, assignor to Staalkat B.V., Aalten, Netherlands

Filed Nov. 13, 1980, Ser. No. 206,681

Claims priority, application Netherlands, Nov. 16, 1979, 7908406

Int. Cl.³ A01K *43/08*

U.S. Cl. 209—513 **7 Claims**



1. A method of weight grading and further processing unpackaged eggs comprising supplying eggs to a weighing station, weighing a plurality of eggs simultaneously at the weighing station to determine the weight class to which each egg belongs, transferring the weighed eggs from the weighing station to a conveyor which transports and discharges the eggs in unpackaged condition, according to their weight class, to a plurality of storage belts, each belt receiving eggs of a given weight class, storing the unpackaged eggs on the storage belts, and subsequently discharging eggs of a given weight class from the respective belt, on demand, to a packaging machine.

4,356,921

INSPECTION APPARATUS, E.G. FOR A SORTING MACHINE

Herbert Fraenkel, London, England, assignor to Gunson's Sortex Limited, London, England

Filed Aug. 11, 1980, Ser. No. 177,246

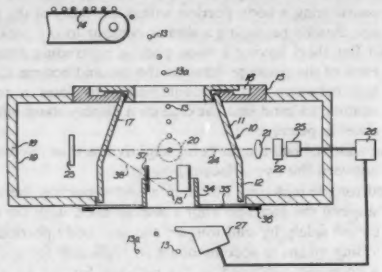
Claims priority, application United Kingdom, Jan. 28, 1980, 8002773

Int. Cl.³ B07C *5/342*

U.S. Cl. 209—576 **15 Claims**

1. Inspection apparatus comprising a transparent or translucent tubular member having at least a frusto-conical portion, illuminating means disposed externally of the tubular member for producing an illuminated zone within the frusto-conical portion, and viewing means disposed externally of the tubular member and arranged on a viewing axis which passes only through the frusto-conical portion, the viewing means being arranged to view objects passing through the illuminated zone

in the frusto-conical portion so as to respond to the value of a property of said objects, the tubular member reflecting substantially no light from the illuminated zone onto the viewing means.



4,356,922

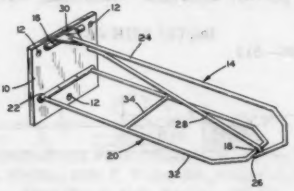
COLLAPSIBLE SADDLE RACK

Cornell W. Dierksheide, 13115 Wayne Rd., Bradner, Ohio 43406

Filed Mar. 17, 1980, Ser. No. 131,068

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—13 **1 Claim**



1. A collapsible storage rack comprising a generally vertically disposed mounting plate; an upper frame member; a lower frame member including a U-shaped frame having sides arranged to give lateral support to the sides of a saddle and said upper frame member including a rod spaced above and between the U-shaped frame of said lower frame member whereby a saddle supported on said frame members is supported by the rod of said upper frame member and the sides of said U-shaped frame of said lower frame member; hinge means hingedly attaching said upper and lower frame members to said mounting plate for rotation about vertically spaced apart horizontal axes; and a hook extension arranged to define a notch open generally towards said mounting plate at the distal end of said upper frame member and arranged to receive the distal end of said lower frame member, whereby said frame members interengage and are self-supporting in an upper load-bearing position, and may be disengaged and rotated to a lower collapsed position.

4,356,923

STORAGE AND DISPENSING RACK

Raymond R. Young, Glenview; Russell M. Barnes, Bloomingdale, and Donald W. Wendel, Mt. Prospect, all of Ill., assignors to Visual Marketing, Inc., Chicago, Ill.

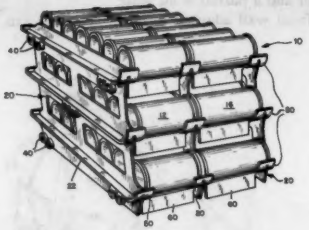
Filed May 22, 1980, Ser. No. 152,301

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—49 D **11 Claims**

1. A rack for storing and dispensing individual containers of generally cylindrical shape, said rack comprising:

at least two identical side members, each side member having a plurality of apertures in paired, adjacent relationships, each side member further having a plurality of pairs of support tracks, each pair having a support track on either side of said side member at the same vertical location; and



a plurality of rods, each end of each rod being removably received by a separate one of said adjacent pair of apertures so that said rods interconnect said side members at a plurality of locations whereby said support tracks cooperate to support the containers along an incline.

4,356,924

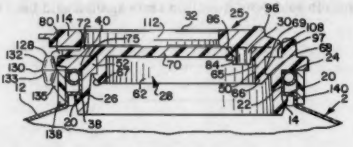
CONTAINER CLOSURE WITH RETAINER HINGE

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Mar. 11, 1981, Ser. No. 242,758

Int. Cl.³ B65D *39/00*

U.S. Cl. 215—237 **13 Claims**



1. A closure for a container, said closure having a neck with a bore providing a pour opening, a plug adapted to be inserted into said opening for closing it, hinging means hinging said plug to said neck, a tab for moving said plug to an open position tethered to said plug diametrically opposite to said hinging means, said hinging means and means disposed adjacent said neck having releasably cooperative parts operative to hold said plug in said open position at one side of said pour opening with said tab extended radially outwardly of said neck.

4,356,925

PRESSURE-RESISTANT CONTAINER FOR LIQUIDS, GASES OR LOOSE MATERIAL COMPOSED OF TWO OR MORE SHELLS

Helmut Gerhard, Weitefeld, Fed. Rep. of Germany, assignor to Westerwalder Eisenwerk Gerhard GmbH, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,223

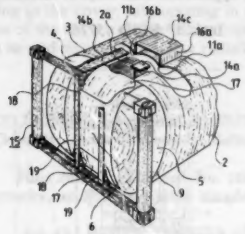
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951554

Int. Cl.³ B65D *87/00*; B65J *1/02*

U.S. Cl. 220—1.5 **10 Claims**

1. A pressure-resistant container for liquids, gases or loose material composed of at least two part-cylindrical shells which have mutually parallel axes and intersect each other so as to form troughs between the tops and bottoms thereof, respectively, and end walls, each of which is formed by two halves of a cap-shaped member and a central shell element interconnected between section edges of said halves in a manner clos-

ing an opening between the section edges of the halves, wherein each central shell element is curved about a horizontal transverse axis, the radii of the curvature of the central shell element corresponding to that of the section edges of the halves of the cap-shaped member between which it is interconnected, and is provided, at opposite ends thereof, with vertical



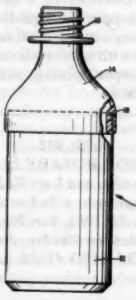
end surface portions which are, at ends of the part-cylindrical shells, joined at their edges along the height of the longitudinal troughs formed between the tops and bottoms of the part-cylindrical shells of the container by their intersection, whereby said central shell element forms tunnels respectively interconnecting the tops and bottoms of said part-cylindrical shells.

4,356,926

METHOD OF BONDING PLASTIC TO METAL AND CONTAINER FORMED THEREBY

William J. Priestly, Rte. 2, Box 6, Shelby, N.C. 28150, and Nelson E. McLoughlin, 8517 Old Concord Rd., Newell,, N.C. 28126

Filed Mar. 19, 1980, Ser. No. 78,180
Int. Cl.³ B65D *8/04*
U.S. Cl. 220—67 **5 Claims**



1. A method of forming a complete container having a metal base and a plastic top comprising the steps of: making a metal, open topped, closed bottom, cylindrical container preform; and forming a plastic top thereon by insert injection molding under a pressure of from 8,000 to 12,000 psi.

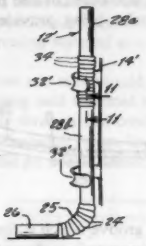
4,356,927

POP-UP STRAW FOR BEVERAGE CANS

George W. Cooper, and Gloria A. Clark, both of 2210 Jessup St., Wilmington, Del. 19802

Filed Sep. 14, 1981, Ser. No. 302,195
Int. Cl.³ B65D *47/06*
U.S. Cl. 220—90.2 **4 Claims**

1. A pop-up straw and beverage can assembly, comprising, in combination, a beverage can containing a beverage, and a pop-up straw installed inside said can, said can including a removable tab on its top wall, and said straw including a plurality of accordian pleats for compressing said straw in said can



under said tab, said pleats including flotation means, and a lower end portion of said straw resting upon the bottom wall of said can.

4,356,928

DECORATIVE ARTICLE CONTAINING FOWL

William Stafford, 101 Wheeler Dr., Hanhan, S.C. 29406

Filed Jun. 22, 1981, Ser. No. 275,719
Int. Cl.³ A01M *31/06*; A63H *3/00*
U.S. Cl. 220—263 **3 Claims**

1. A decorative fowl provided for receiving articles shaped to simulate an ornamental carved bird comprising:
an elongated body;
a receptacle provided in said elongated body having an opened top for receiving articles;
a pair of wings pivotally carried on said elongated body;
a head simulating the head of a bird rotatably carried adjacent a front top portion of said elongated body;
linkage means extending between said head and said pair of wings so that upon rotating said head from a first position to a second position, said wings are rotated in opposite directions from a position wherein they extend over the top of said receptacle providing a closure therefor to an opened outwardly extending diverging position providing access to said receptacle.

4,356,929

POP-TOP LID

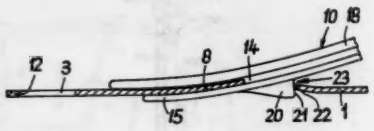
Helmut Müller-Kühn; Günter Scharren, both of Mülheim-Ruhr; Wilfried Kohlmeier, Bottrop; Michael Grillo, and Jürgen Rost, both of Essen, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,789
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003804
Int. Cl.³ B65D *17/34, 43/20*
U.S. Cl. 220—270 **10 Claims**

1. A pop-top lid for a container, said lid comprising:
a lid surface having a pre-formed opening in the plane thereof, said opening serving for dispensing the contents of said container and being provided with an edge includ-

ing two essentially parallel side edge portions located on opposite sides of said opening; and

a closure part which is provided with a tab and is slidably guided along said side edges of said pre formed opening, said closure part also being provided with an uninterrupted peripheral groove which is operatively connected to said tab and corresponds in shape to the shape of said pre-formed opening, said closure part being further provided with abutment means for limiting the slide path of said closure part.



4,356,930

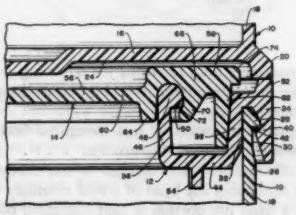
CONTAINER, ENGAGEMENT RING AND COVER ASSEMBLY

Charles R. Roper, Orange, Calif., assignor to William H. Roper; Robert E. Roper; Elvere Roper and Ralph A. Miller, all of Newport Beach, Calif., a part interest to each

Filed Apr. 20, 1981, Ser. No. 255,377

Int. Cl.³ B65D *41/16, 41/18*

U.S. Cl. 220—306 **64 Claims**



1. In an assembly of a container, engagement ring and cover, the improvements including: the engagement ring having a generally inverted U-shaped portion telescoped downwardly over an open upper end of the container, said ring inverted U-shaped portion having interior wall means generally vertically and transversely abutting an inner side of said container upper end; the cover terminating transversely outwardly at said engagement ring in an edge portion at said ring inverted U-shaped portion with said edge portion having an exterior wall generally vertically and transversely abutting an inner side of said ring inverted U-shaped portion interior wall means; said engagement ring and cover being constructed and arranged exerting transverse pressure outwardly to abutting pressure seal between said cover edge portion exterior wall and ring inverted U-shaped portion interior wall means and between said ring inverted U-shaped portion interior wall means and container upper end inner side; at least partially transversely extending interengagement means between said container upper end and ring and between said ring and cover edge portion for retaining said ring against generally vertical separation from said container and said cover against generally vertical separation from said ring.

4,356,931

LOCKING SYSTEM FOR A SYNTHETIC RESIN PACKING CONTAINER

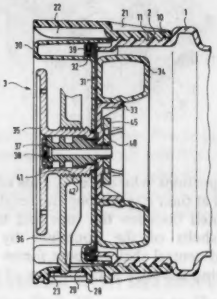
Friedel Schinke, Löhne, Fed. Rep. of Germany, assignor to Sulo Eisenwerk Streuber & Lohmann GmbH & Co. KG, Herford, Fed. Rep. of Germany

Filed Jun. 19, 1981, Ser. No. 275,391

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 3024033

Int. Cl.³ B65D *45/28*

U.S. Cl. 220—323 **9 Claims**



1. In a lid locking system for a synthetic resin shock-proof shell for packing one single article, the shell having a lid which is able to be opened for taking the article from the shell, the invention residing in that said locking system has

(a) a lock ring fixed permanently to said support shell at an opening thereof, said lock ring having lock keeper openings with lock keeper faces and, next thereto, support and guide ribs,

(b) a castellated guard cover with segment parts in line with the lock ring and having an outer diameter, somewhat smaller than the diameter of a circle running through inner ends of the support and guide ribs and

(c) a lock spider having a screw for screwing it up tight, such spider having legs with outer ends designed to be taken up within said lock keeper openings and being forced against said lock keeper faces.

4,356,932

CASING FOR ROTARY MACHINE

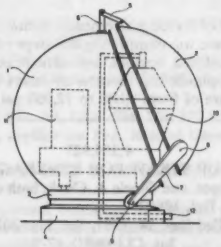
Lennart Wahlstrom, Tumba, and Lars K. J. Ehnstrom, Tullinge, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Filed Jun. 22, 1981, Ser. No. 275,701

Claims priority, application Sweden, Jun. 23, 1980, 8004612

Int. Cl.³ B65D *43/14, 51/04*

U.S. Cl. 220—329 **10 Claims**



1. In combination with a rotor machine having a drive motor and mounted on a foundation, an evacuable casing for said

machine comprising a cover arranged on the foundation to surround said machine and its drive motor, bearing means mounting the cover for rotation relative to the foundation, the cover having an endless base edge, sealing means extending along said base edge to seal against the foundation when a sub-atmospheric pressure is applied within the cover, the cover including first and second parts and means mounting said second part for movement relative to said first part to form a large opening in the cover, said opening in combination with said rotation of the cover relative to the foundation providing easy access to said machine from any radial direction.

4,356,933

CYLINDRICAL WOVEN FABRIC TANK

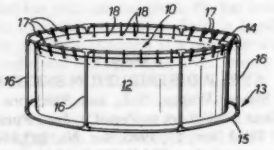
James P. Connolly, 26 Waterloo Park, Belfast B15 5HU, Ireland

Filed Jul. 15, 1980, Ser. No. 169,170

Claims priority, application United Kingdom, Sep. 17, 1976, 38720/76

Int. Cl.³ B65D *90/20*; B65B *67/12*

U.S. Cl. 220—401 **7 Claims**



1. A cylindrical static vessel for holding a fluent material comprising

a. a flexible, generally planar vessel bottom;

b. a flexible, perimetral wall upstanding from the vessel bottom and circular in plan, said perimetral wall being formed of waterproof-coated woven fabric of synthetic material, the warp of which runs lengthwise around said wall and the weft thereof being generally upright, said synthetic material having a sufficient strength-to-weight ratio and stretch characteristics sufficient that the wall requires no internal reinforcement or external support against outward pressure from filled vessel contents; and

c. framework means for supporting the upper edge of an empty vessel without supplying substantial support to the vessel when the vessel is filled with said fluent material and resting on a stable, level surface, said support means including a framework surrounding said perimetral wall and including an upper, generally horizontally disposed member, and flexible support means connected between said upper horizontally disposed member and the upper edge of the perimetral wall to maintain said perimetral wall in an upstanding position when the vessel is empty.

4,356,934

APPARATUS FOR SPRAY-TREATING SEEDS DURING PLANTING

Raymond P. Knake, Urbandale, Iowa, assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 852,993, Nov. 18, 1977, abandoned. This application Mar. 13, 1981, Ser. No. 243,617

Int. Cl.³ A01C *1/06*

U.S. Cl. 221—96 **1 Claim**

1. An in-the-field spray coating system adapted to be attached to a planter unit with power take-off means, said unit having at least one seed hopper for sorting seed, a blower, a delivery chute interconnecting said hopper to a rotatable drum, and at least one delivery tube for distributing seeds from the drum for planting whereby seeds may flow from said hopper through said delivery chute and into said drum and then by air pressure introduced by said blower into said drum from said drum into said at least one delivery tube for insertion into the ground, said seed spray coating system comprising:

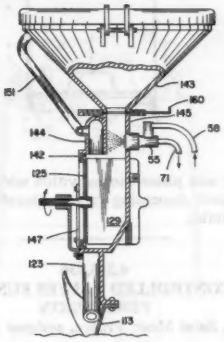
a storage tank for a fluidized treatment material attachable to said planter unit so as to move with said planter unit;

jet nozzle means positioned in said delivery chute to disperse said fluidized treating material as a mist into said delivery chute;

conduit means from said tank to said jet nozzle means;

a pump for pumping said fluidized treating material from said storage tank through said conduit means;

valve means in said conduit means for controlling flow from said pump to said jet nozzle means;



pressure valve means responsive to pressure in said conduit means adapted to control the rate of flow of said material to said nozzle means, return conduit means between said jet nozzle means and said storage tank for continuously returning a predetermined flow of said fluidized treating material to said storage tank in accordance with the setting of said valve means;

whereby said fluidized treating material may be jetted as a mist into said delivery chute so that said mist costs said seeds and whereby said treated material is at least partially dried thereon by air flow from said blower in distributing seeds to said at least one delivery tube for planting in a furrow.

4,356,935

METHOD AND APPARATUS FOR STORING AND DISPENSING FLUID FOODSTUFF

Robert Y. Kamin, Narberth, Pa., assignor to Kardon Industries, Inc., Philadelphia, Pa.

Filed Apr. 18, 1979, Ser. No. 31,041

Int. Cl.³ G01F *11/00*

U.S. Cl. 222—1 **28 Claims**

28. A method of storing and dispensing fluids from a container, said method comprising:

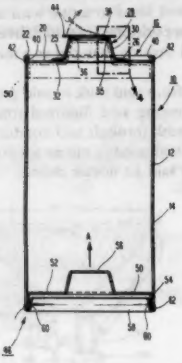
(a) providing a spiral wound tubular enclosure having a dispensing means at one end and another end which is open;

(b) providing fluid material within said tubular enclosure;

(c) enclosing the open end of said tubular enclosure with a piston means having a rearwardly disposed flange dimensioned to slideably engage said tubular enclosure;

(d) sealing said open end of said tubular enclosure with a retaining ring which is generally U-shaped in cross-section and having a first portion for forming a permanent crimped engagement with said tubular enclosure and a second portion for engaging said flange so that said flange and said open end of said tubular enclosure are situated between said first and second portion of said retaining ring and for maintaining said flange in a releasable mechanical

engagement between said second portion and said open end of said tubular enclosure; and



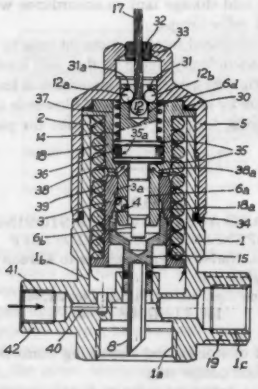
(e) moving said piston means within said tubular enclosure toward said dispensing means, thereby dispensing said fluid material.

4,356,936

REMOTE-CONTROLLED VALVES FUNCTIONING BY PERCUSSION

Andre Legris, Saint Maur, France, assignor to Legris, Rennes, France

Filed May 28, 1980, Ser. No. 154,106
Claims priority, application France, May 30, 1979, 79 13886; Apr. 14, 1980, 80 08306
Int. Cl.³ B67B 7/24
U.S. Cl. 222—5 **16 Claims**



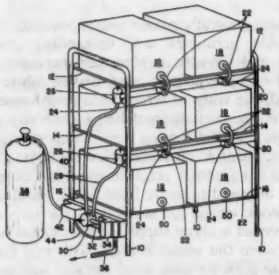
1. In a valve functioning by percussion, mounted on a container of fluid under pressure, utilizing a closure diaphragm adapted to be perforated by a striker member in order to release the pressurised fluid, said striker member being mounted in a body closed by a cover and secured to said container, an improvement which comprises a tubular guide member mounted on the cover, extending inside the body and presenting a bore in which is slidably mounted a control rod connected by a releasable connector means to an operating cable for movement thereby from a non-operate position into an operating position in which said connector means releases to allow escape of said cable, said guide member being provided with an external cylindrical portion on which is slidably mounted a percussion member that drives a striker member and is subjected to the preload action of a main spring in abutment against the cover, said tubular guide member comprising radial housings, a plurality of balls captively retained each within a corresponding one of said radial housings, each ball being normally held, under the action of said spring, in a locked position of abutting engagement against a conical portion of said percussion member and against a given diameter section of said control rod to thereby lock the percussion member against movement by said spring and thus prevent the striker member from perforating said closure diaphragm, each ball being moveable in the corresponding radial housing in response to the arrival of the control rod at said operating position, into an unlocked position of abutting engagement against a reduced diameter section of the control rod, each ball when in said unlocked position releasing said percussion member for movement by said spring to drive said striker member into a position perforating said closure diaphragm.

4,356,937

SYRUP DISTRIBUTION SYSTEM

Donald R. Simon, Wayne, N.J., and Salvatore P. Porrazzo, Wilton, Conn., assignors to PepsiCo. Inc., Purchase, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,650
Int. Cl.³ B67D 5/66
U.S. Cl. 222—129.2 **8 Claims**



1. A distributing system for supply of fluid from discrete supply containers and providing for replacement of empty containers without interruption of the fluid supply, comprising:

a. first and second shelves, each of which is adapted to hold a plurality of discrete fluid supply containers thereon;

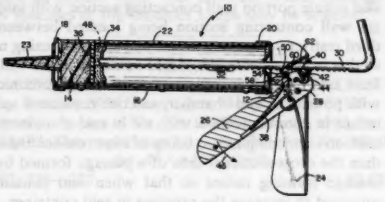
b. first and second supply manifolds associated respectively with said first and second shelves, each of which has a plurality of input conduits therealong for connection to a plurality of discrete supply containers; and

c. a distribution valve having a first inlet port connected to said first manifold and a second inlet port connected to said second manifold and having an outlet port connected to a fluid dispensing outlet and connecting only one inlet port at a time to the outlet port, such that fluid is supplied from the containers on either of said first and second shelves until the containers on that shelf are empty, at which time the distribution valve is switched to the other inlet port to supply fluid from the containers on the other shelf to allow replacement of the empty fluid containers without interruption of the fluid supply to the fluid dispensing outlet.

4,356,938
CAULKING GUN WITH PRESSURE RELEASE MECHANISM

Steven J. Kayser, 212 Walnut St. Southeast, Minneapolis, Minn. 55414

Filed Oct. 10, 1980, Ser. No. 195,886
Int. Cl.³ B67D 5/42
U.S. Cl. 222—327 8 Claims



1. A pressure relief mechanism for use with a caulking gun having a ratchet bar with ratchet teeth, the bar being attached to a piston for extruding an elastic fluid, a handle with an operating lever pivotally attached at a point proximate upper ends of the handle and the operating lever, means for biasing lower ends of the handle and the operating lever away from one another, and first pawl means pivotally attached to the operating lever proximate the upper end of the operating lever and biased to engage the teeth of the ratchet bar for forward movement of the ratchet bar and piston as the lower end of the operating lever is squeezed toward the handle, the pressure relief mechanism comprising:

slot means proximate the upper end of the handle, the slot means being generally parallel to the ratchet bar proximate the upper end of the handle and having a front end and a rear end;

a pin slidably engaging the slot means;

second pawl means for engaging the teeth of the ratchet bar to prevent rearward movement of the ratchet bar, the second pawl means being pivotally attached to the pin;

biasing means for biasing the second pawl means toward the rear end of the slot means;

a cam surface on an upper portion of the operating lever, the cam surface having first and second portions of different radius whereby when the operating lever is squeezed toward the handle, the ratchet bar and piston are urged forwardly by the first pawl means placing under pressure and extruding the elastic fluid with the second pawl means and pin being urged by the first portion of the cam surface to the front end of the slot means, and when the operating lever is released, the second portion of the cam surface permits the biasing means to bias the second pawl means to the rear of the slot means permitting the ratchet bar to move rearwardly a limited distance, relieving pressure sufficiently to stop extrusion of the elastic fluid.

4,356,939
DISTRIBUTING OR POURING CAPS, PARTICULARLY FOR BOTTLES OR OTHER CONTAINERS

Daniel Fitte, Paris, France, assignor to Rical S.A., Longvic, France

Continuation-in-part of Ser. No. 887,370, Mar. 16, 1978, abandoned. This application Feb. 8, 1980, Ser. No. 119,966
Claims priority, application France, Feb. 18, 1977, 77 04861
Int. Cl.³ B65D 25/48, 47/10
U.S. Cl. 222—541 2 Claims

1. A unitary cap for facilitating the pouring of contents from a bottle comprising:

an outer skirt having an inner annular boss for snapfastening said cap onto a bottle,

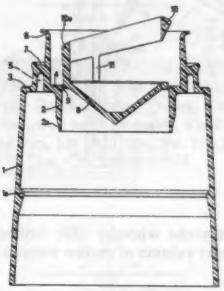
an inner skirt for fitting within the neck of a bottle,

an annular portion connecting the upper end of said inner and outer skirts for resting against the upper surface of a bottle neck,

an annular pouring rim extending axially from said annular portion,

a removable sealing membrane joined to said annular portion by an annular strip surrounding said sealing membrane, said sealing membrane being shaped as a cone extending from the edge of the membrane and having its head turned in a direction towards the inside of a bottle when said cap is fastened thereon, and,

a gripping ring for removing said sealing membrane and disposed above said membrane and connected at one end



thereof to a peripheral part of said membrane by at least a first vertical tongue, said gripping ring being provided with two supplementary vertical tongues located on either side of said first vertical tongue closer to said one end of said gripping ring than to an opposite end of said gripping ring and abutting on a peripheral part of said membrane, said two supplementary vertical tongues permitting said gripping ring to be maintained inclined relative to said first vertical tongue, with the higher end of said inclined gripping ring being opposite to said one end, whereby the combination of the inclined gripping ring and the cone shaped sealing membrane facilitates the gripping of said gripping ring for removal of said sealing membrane.

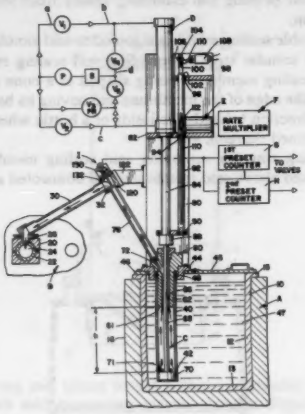
4,356,940
APPARATUS FOR DISPENSING MEASURED AMOUNTS OF MOLTEN METAL

Al Ansorge, Mentor, Ohio, assignor to Lester Engineering Company, Cleveland, Ohio

Filed Aug. 18, 1980, Ser. No. 179,113
Int. Cl.³ B22D 39/02
U.S. Cl. 222—596 10 Claims

1. In apparatus adapted to be mounted on a vat at least partially filled with molten metal for dispensing accurately measured amounts of such metal, a positive displacement hydraulic pump having an inlet opening adapted to be positioned substantially below the lowest level of the molten metal to be held by the vat and an outlet opening extending upwardly to a dispensing point, power means for operating said pump, a pulse generator associated with said pump and generating a plurality of pulses directly proportional to the displacement of said pump, a first pulse counter including means for actuating an electrical circuit when said counter reaches a preset value, means associated with said circuit for deactivating said power means, a probe at said dispensing point which provides said

counter an electrical signal when molten metal reaches said point, said counter commencing to count when receiving a



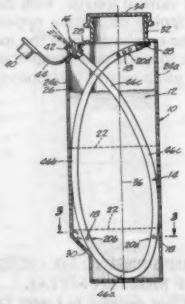
signal from said probe whereby after molten metal contacts said probe a preset volume of molten metal will be dispensed.

4,356,941

SQUEEZE-TYPE DISPENSER FOR POWDERED MATERIALS

John W. McRoskey, Los Angeles, and Delbert D. Swartz, Torrance, both of Calif., assignors to Republic Tool & Manufacturing Corporation, Carlsbad, Calif.

Filed May 19, 1980, Ser. No. 150,778
Int. Cl.³ B65D *37/00*
U.S. Cl. 222—632 **14 Claims**



1. A squeeze type dispenser for dispensing a uniform cloud of a powder material in any position of the dispenser, the dispenser comprising:

a. a container adapted to be at least partially filled with powder material to be dispensed therefrom, said container having a deformable wall portion whereby, upon deformation, the volume of the container will be reduced, said container having a nozzle end and a closed end,

b. a dispensing nozzle at the nozzle end of said container,

c. passage forming means within said container having a nozzle portion connected to said dispensing nozzle for delivering an air-powder cloud therefrom, said passage forming means having an intermediate portion connected to said nozzle portion and positioned in the closed end of said container and an end portion having one end thereof closed and the other end thereof connected to said intermediate portion and positioned in the nozzle end of said container, said intermediate portion being in the form of a U-bend of at least 180°, said nozzle and end portions having wall contacting sections thereof which contact said container wall, and

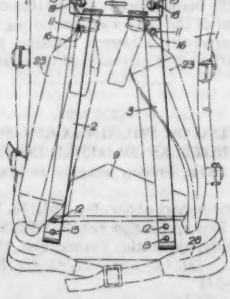
d. at first restrictive opening means defined in said end portion, a second restrictive opening means defined in said intermediate portion closely adjacent to said end portion wall contacting section, a third restrictive opening means defined in said intermediate portion closely adjacent to said nozzle portion wall contacting section with said nozzle wall contacting section being located between said third restrictive opening means and said dispensing nozzle so that in any orientation of said container there will be at least one restrictive opening means in communication with powder in said chamber, and one restrictive opening means in communication with air in said container, each restrictive opening means being of less cross-sectional area than the cross-sectional area of a passage formed by said passage forming means so that when said container is squeezed to increase the pressure in said container, there will be a pressure drop across each restrictive opening means between said container and the passage in said passage forming means, said difference in pressure causing a restricted flow of powder and air from the container into the passage, said passage in said passage means being closed from the interior of said container to be maintained out of communication with the interior of said container between said nozzle portion wall contacting section and said dispensing nozzle to define a mixing chamber in which powder and air flowing through said passage forming means thoroughly mix prior to reaching said dispensing nozzle so that the air and powder flowing in said passage forming means produce a uniform mixture of air and powder irrespective of the operating position of said container.

4,356,942

INTERNAL FRAME RUCKSACK

James A. Hayes, "Sonora", Drakelands, County Kilkenny, Ireland

Filed Sep. 24, 1980, Ser. No. 190,184
Claims priority, application Ireland, Sep. 24, 1979, 1814/79
Int. Cl.³ A45F *3/04*
U.S. Cl. 224—211 **6 Claims**



1. An internal frame rucksack comprising a sack made from a flexible material, a frame comprising at least two longitudinal frame members of substantially rigid material located in spaced-apart relationship in pockets within the rear wall of the

sack, a carrying harness having at least two shoulder straps, a plate located externally of the rear wall of the sack at a location adjacent the top of the sack, releasable securing means rigidly connecting the plate to the frame members adjacent the upper ends thereof, a plurality of slots formed in the plate to selected ones of which the upper ends of the shoulder straps may be attached whereby there is a direct connection between the upper ends of the shoulder straps and the frame members, and wherein there is at least two pairs of slots in the plate and the slots are so spaced apart that different width spacings and length spacings of the shoulder straps may be selected.

4,356,943

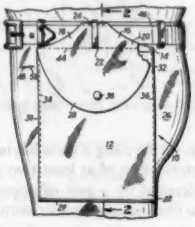
ACCESSORY FOR TROUSERS AND THE LIKE

Charles Berman, 6025 Shore Blvd., Gulfport, Fla. 33707

Continuation-in-part of Ser. No. 164,833, Jun. 30, 1980, Pat. No. 4,303,187. This application Nov. 25, 1981, Ser. No. 325,022

Int. Cl.³ A45C *11/00*

U.S. Cl. 224—222 **12 Claims**



1. A clothing accessory comprising

a base panel including

an upper portion, and

a lower portion,

said upper portion being bifurcated to form a pair of spaced apart belt loop portions,

said belt loop portions being disposed on said upper portion of said base panel for the purpose of securing said upper portion to the belt of a user, and

said belt loop portions being spaced from one another a distance substantially equal to the width of a belt loop of a pair of trousers worn by said user so as to enable said belt loop portions to be disposed in juxtaposition with respect to said belt loop.

4,356,944

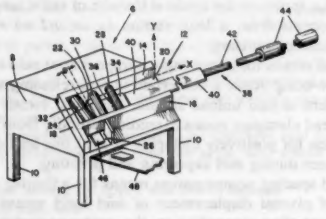
METHOD AND APPARATUS FOR BREAKING PRESCORED CERAMIC SUBSTRATE PLATES

Leslie L. Cotton, Riverside, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Mar. 6, 1981, Ser. No. 241,262

Int. Cl.³ B26F *3/00*

U.S. Cl. 225—5 **13 Claims**



13. A method for sequentially fracturing a ceramic plate along a plurality of transverse score lines on one side of the plate to produce a plurality of separate substrates, the method comprising the steps of:

placing the ceramic plate with its scored side up on a tilted, flat surface;

moving the ceramic plate along a predetermined path on the surface past a break edge into a break roller which is canted in the X-axis with respect to the break edge;

maintaining a low friction support against the ceramic plate as it is moving along the predetermined path; and

applying a graduated downward pressure on the end of the plate moving into the canted break roller to cause the plate to incrementally fracture along each score line as said each score line moves past the break edge.

4,356,945

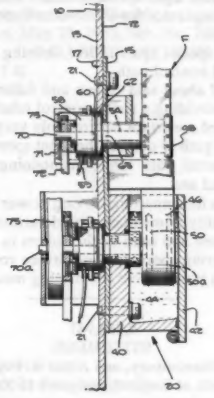
MOTION PICTURE PRINTING MACHINE HAVING INTERCHANGEABLE FILM RECEIVING UNITS

William D. Carter, Rancho Palos Verdes, Calif., assignor to Carter Equipment Co., Inc., Lawndale, Calif.

Filed Sep. 11, 1980, Ser. No. 186,264

Int. Cl.³ B65H *17/38*

U.S. Cl. 226—6 **4 Claims**



1. The method of continuously driving a perforated strip of film in a manner calculated to avoid damaging its perforations, the strip of film being characterized by a maximum safe driving tension, said method comprising the steps of:

selecting a toothed drive sprocket having circumferential teeth adapted to engage the corresponding perforations in the strip of film;

engaging the sprocket teeth with the film perforations;

selecting a magnetically controlled clutch having two relatively rotatable plates and also having circuit means energizable for establishing a selected degree of mechanical coupling between the plates;

selecting an alternating voltage source, rectifying the voltage from the source, and then applying the rectified voltage to the circuit means;

fixedly securing one clutch plate to the drive sprocket;

energizing the circuit means at a level sufficient to couple the clutch plates with an amount of torque sufficient to drive the strip of film but not sufficient to produce the maximum safe driving tension in the strip of film; and

then rotatably driving the other clutch plate so as to advance the strip of film;

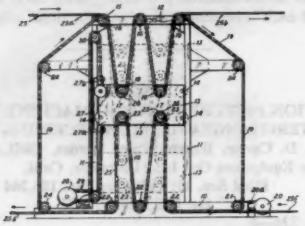
whereby if the film tension unexpectedly increases, the clutch plates will slip relative to each other before the maximum safe driving tension is exceeded.

4,356,946

CONSTANT CONVEYOR WEB OUTPUT VELOCITY COMPENSATOR FOR VARIABLE INPUT WEB VELOCITIES

Alfred J. Gaskell, Hopkins, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Continuation of Ser. No. 809,551, Jun. 24, 1977, abandoned.
This application Oct. 17, 1980, Ser. No. 197,829
Int. Cl.³ B65H 17/42
U.S. Cl. 226—117 9 Claims



1. A controllable input speed, constant tension and constant output speed comparator for a web conveyor system comprising:

a plurality of spaced apart rollers defining a back and forth input speed control path,

a web trained about said rollers and following the control path and providing a speed control takeup length,

power actuated means for controllably varying the length of the control path to control the input speed of a strip entering the control path while maintaining a constant web output speed and

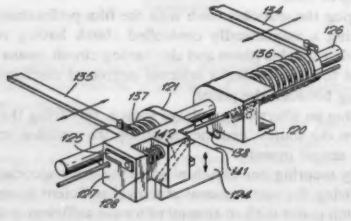
driving means for imparting driving power to a set of rollers of the plurality to maintain a predetermined output velocity in the web and each of the rollers in the set of rollers having a spring spool demand driven roller for transmitting driving power from the driving means to the rollers.

4,356,947

STITCHERS

Fred Marshall, Stantonbury, and Attila A. Fogarasy, Newcastle upon Tyne, both of England, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1979, Ser. No. 106,423
Claims priority, application United Kingdom, Dec. 29, 1978, 50328/78
Int. Cl.³ B25C 5/04
U.S. Cl. 227—5 10 Claims



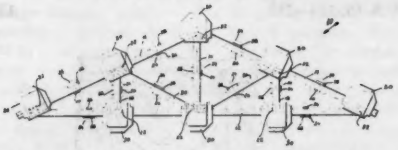
1. A wire stitcher apparatus having a cutter for cutting a length of wire from a supply thereof and a stitcher head for forming and driving the length of cut wire in the form of a staple for binding a set of sheets, the improvement including means for moving the cutter and means for advancing the wire to the stitching head, said means for moving the cutter arranged to position the same a distance in accordance with the thickness of a set, said means for advancing the wire arranged to advance the same a length in accordance with the thickness of a set, and an inhibitor means and a gripper means for advancing the wire, said advancing of the wire and movement of the cutter being limited by said inhibitor means positioned in accordance with set thickness.

4,356,948

TRUSS ASSEMBLY UNIT

Albert Bardenstein, Syracuse, N.Y., assignor to Irwin J. Berlin

Filed Jul. 24, 1980, Ser. No. 171,978
Int. Cl.³ B27F 7/02
U.S. Cl. 227—48 7 Claims



1. An apparatus for forming a truss having at least one joint defined by the intersection of at least two sections of lumber, said joint being formed by a pair of opposed plates each of which is nailed to each of said lumber sections, said apparatus comprising:

means for holding each of said sections of lumber in position to form said joint; said holding means including a pair of spaced apart clamp members positioned at the top of vertical support members, means for securing a stack of lumber between said support members, and means for lifting said stack toward said clamp members;

means for positioning said plates on opposite sides of said joint; and,

means for pressing nails prepositioned in said plates into said sections.

4,356,949

ROTARY TRANSFER ASSEMBLY FOR HIGH SPEED RADIAL LEAD COMPONENT SEQUENCING AND INSERTING MACHINE

Michael D. Snyder, Binghamton, N.Y., and Crawford A. Matson, Wyalusing, Pa., assignors to Universal Instruments Corporation, Binghamton, N.Y.

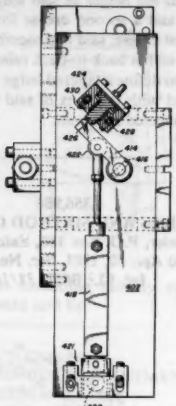
Filed Apr. 18, 1980, Ser. No. 141,609
Int. Cl.³ H05K 13/04
U.S. Cl. 227—76 7 Claims

1. An apparatus for cyclical transfer of radial lead electronic components from a load station to an unload station, said apparatus comprising:

head means for capturing a component at said load station, pivoting about a centerline to and releasing said component at said unload station, said head means comprising lead clamping means extending laterally from said centerline for positively clamping at least one lead of a component during said capturing and pivoting;

lead spacing compensation means for adjusting the amount of pivotal displacement of said head means about said centerline, according to the center-to-center spacing of the leads of said components, to properly align said components for release at said unload station, said lead spacing

compensation means adjustable cyclically according to a controller; and



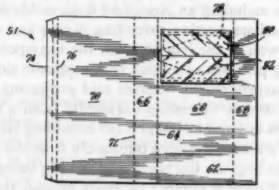
means for pivoting said head means according to said controller.

4,356,950

EASY ACCESS DISPENSING CARTON WITH DUST BARRIER

Albert A. Benham, Granville, Mass., assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 24, 1981, Ser. No. 257,276
Int. Cl.³ B65D 5/22, 5/62, 5/72
U.S. Cl. 229—11 4 Claims



1. A two piece substantially rectangular carton for housing and dispensing elongated articles, said articles being disposed perpendicular to a major lengthwise dimension of the carton, said carton comprising;

an open top tray portion including

a bottom wall,

a pair of opposed side walls extending upwardly from said bottom wall, and

a pair of opposed end walls extending upwardly from said bottom wall between opposed end portions of said side walls, said end walls of said lower tray portion includes a panel bent back upon itself to define an inner and outer end wall panel, a tab connected to the inner end wall panel disposed to overlie said bottom wall, and at least one locking tab in said bottom wall adjacent each of said end wall tabs for overlying the same and locking the same to said bottom wall, and

an open ended sleeve adapted to be slid over said tray portion to substantially enclose the same, said sleeve including:

a top wall having an upper and lower surface

a bottom wall, and

a pair of opposed side walls between said top and bottom wall,

said top wall of said sleeve including an opening therethrough extending entirely thereacross and providing access to the interior of said tray so that one of the elongated articles adapted to be housed within said tray can be removed from said tray through said access opening, and

a resilient transparent film connected to the lower surface of said top wall panel of said sleeve in such a manner that opposed side edges thereof are spaced slightly inwardly from the opposed lateral edges of said top wall, said film adhesively connected to the lower surface of said top wall only along the upper and lower edges thereof and adjacent the top and bottom edges of said opening,

said film including a perforated score line substantially bisecting the film and extending substantially perpendicular to the opposed lateral edges of the top panel of said sleeve.

4,356,951

POURING SPOUT CARTON

David Sharp, Toronto, Canada, assignor to Ford Printing & Packaging Ltd., Don Mills, Canada

Filed May 28, 1981, Ser. No. 268,711
Int. Cl.³ B65D 5/72, 39/00
U.S. Cl. 229—17 R 7 Claims

1. A carton comprising

opposite normally flat side panels,

a normally flat transverse panel joined to the side panels along one edge of each of the side panels,

an upper spout edge which is closed along a line cut across the transverse panel and angled downwardly in the side panels to first opposed flexure points in the side panels,

a lower spout edge scored across the transverse panel, below the upper spout edge and angled upwardly in the side panels to the first flexure points, the lower spout edge intersecting each said edge of the side panels at second flexure points, and

a score line extending from each of the first flexure points angularly downwardly to third flexure points at each said edge of the side panels below the second flexure points,

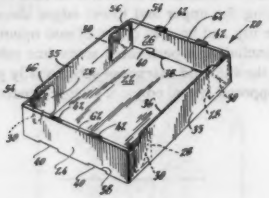
the transverse panel thus providing, between the third flexure points and the lower spout edge, a trigger surface that can be pressed to swing inwardly of the carton about the third flexure points, forcing the lower spout edge and the second flexure points inwardly, and the side panels to bulge outwardly at the first flexure points, until the second flexure points lie in a common plane with the other flexure points, after which further inward movement of the trigger panel is assisted by pressure from the outwardly bulged side panels, whereby the second flexure points are urged further inwardly and the upper spout edge is urged to extend outwardly by the pressure from the bulged side panels and the spout is held open.

4,356,952

STACKABLE TRAY WITH CORNER SUPPORTS

Vernon C. Rekow, St. Paul, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 8, 1981, Ser. No. 271,696
Int. Cl.³ B65D 5/44
U.S. Cl. 229—34 R 6 Claims



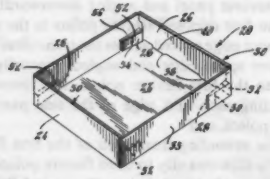
1. A stackable tray for supporting articles comprising:
a pair of opposed side walls each including a retaining lip extending from the top edge thereof;
a pair of opposed end walls connecting said side walls;
each of said side and end walls being foldably connected to a bottom wall for supporting said articles;
each of said end walls including a pair of panels foldably connected to each other in back-to-back relation; and
each of the innermost of said end wall panels having a pair of tapered corner ledge wings equal in height to said side walls foldably connected to opposed edges thereof, said corner ledge wings include a flap member of lesser height having a first crease and a second crease at an acute angle with said first crease, said flap member being folded over along said crease and in back-to-back relation with said corner ledge wing to define a tapered ledge even with said top edge and adjacent to its nearest side wall and with the apex of said tapered ledge remote from its connected end wall, thereby providing support in stacking arrangement.

4,356,953

TRAY COVER WITH SUPPORT LEDGES

Vernon C. Rekow, St. Paul, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 29, 1981, Ser. No. 278,162
Int. Cl.³ B65D 5/44, 5/64
U.S. Cl. 229—34 R 4 Claims



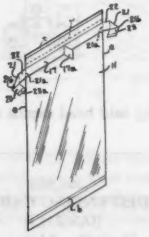
1. A tray cover for a container or tray comprising:
a pair of opposed side walls;
a pair of opposed end walls connecting said side walls, said end walls being of substantially the same height as said side walls;
each of said side and end walls being foldably connected to a top panel for covering said container or tray;
each of said end walls including a pair of panels foldably connected to each other in back-to-back relation; and
each of the innermost of said end wall panels having a pair of tapered support leg wings foldably connected to opposed edges thereof, each of said support ledge wings having an edge contacting said top panel and having a height of much smaller dimension then that of said side and end walls, each of said support ledge wings includes a flap member with the height as said ledge wing and having a first crease and a second crease forming an acute angle with said first crease, said flap member being folded along said creases and in back-to-back relation with said support ledge wing to define a tapered ledge adjacent to its nearest side wall and with the apex of said tapered ledge remote from its connected end wall.

4,356,954

RECLOSABLE BAG AND METHOD OF CLOSING SAME

Albert B. Mojonnier, P.O. Box 188, Eaton, Ind. 47338

Filed Apr. 30, 1981, Ser. No. 259,259
Int. Cl.³ B65D 33/16
U.S. Cl. 229—65 17 Claims



1. In a reclosable bag formed of flexible sheet material and including first and second opposed side walls connected along the side edges of the bag and at the bottom of the bag, the bag having top opening means at the upper end thereof, bag reclosing means including an elongated deformable member having an intermediate portion extending across and secured to the first side wall of the bag adjacent the top opening means and projecting portions extending from opposite side edges of the bag, the improvement wherein said projecting portions each include a tongue extending outwardly from a respective side edge of the bag and an integral tab extending laterally from the tongue at a location spaced outwardly from the respective side edge of the bag, the top portion of the bag being adapted to be roll-folded over a number of times around the intermediate portion of the deformable member to close the bag, the tongues being adapted to be folded inwardly to overlap the roll-folded top portion of the bag at one side thereof, the tabs being adapted to be folded over the top of the roll-folded top portion of the bag and downwardly to overlap the roll-folded top portion at the other side of the bag.

4,356,955

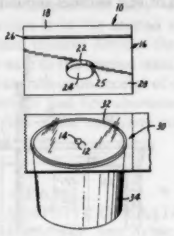
HEAT SEALING PLATEN, METHOD OF SEALING AND SEALED CUP

Paul F. Schmit, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 144,613, Apr. 28, 1980, Pat. No. 4,295,904, which is a division of Ser. No. 917,586, Jun. 21, 1978, Pat. No. 4,216,050. This application Jun. 29, 1981, Ser. No. 278,190
Int. Cl.³ B65D 43/02
U.S. Cl. 229—75 3 Claims

1. In combination:
a cup having an annular lip around an opening in the cup;
a piece of heat sealable and heat shrinkable film sealed to said lip across said opening, said film having a planar portion surrounded by said lip and a portion around said planar

portion between said planar portion and said lip and in generally the same plane as said planar portion having



ridges and grooves extending radially away from said planar portion toward said lip.

4,356,956

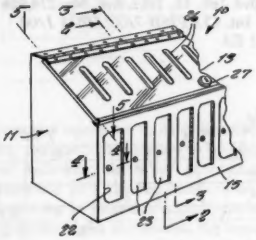
COMMERCIAL MULTICOMPARTMENT MAIL MESSAGE UNIT

Walter D. Long, 137 DeForest Rd., Dix Hills, N.Y. 11746

Filed Jul. 25, 1980, Ser. No. 172,205

Int. Cl.³ B65D *91/00*

U.S. Cl. 232—24 **1 Claim**



1. A commercial multicompartment mail message unit, comprising in combination, an elongated case divided by a plurality of vertical partitions into a row of compartments, and a hinged, transparent cover in an upwardly rearwardly inclined position upon said case; a row of hinged doors on a front of said case, each said door providing access to one said compartment; a row of slots through said cover, each said slot providing access to one compartment located therebelow; opposite side end walls of said case extending upwardly to opposite end edges of said cover so to enclose a space between an upper edge of said partitions and said upwardly inclined cover, said upper edge of said partitions being rearwardly downwardly inclined so to support thereupon an elongated package stored in said space, and allow rearwardly roll or slide of said package; and a rear of said case including means for mounting against a vertical wall; said cover and each said door including key-operated locking means.

4,356,957

CENTRIFUGAL BUCKET

Günter Eberle, 100 Gartenstrasse, 7200 Tuttlingen, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,970

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938317

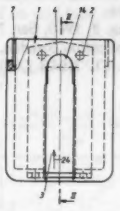
Int. Cl.³ B04B *9/12*

U.S. Cl. 233—26 **6 Claims**

1. A centrifugal bucket for suspension from the pegs of the spinning head of a centrifuge comprising:

a cup-shaped plastic receptacle having side walls defining opposed external recesses adapted to receive said pegs;

a reinforcing member associated with said receptacle extending across the bottom thereof and having elongated leg members extending within said recesses;



the termini of said leg members defining a load-bearing surface engageable with said pegs to thereby suspend said receptacle from said spinning head.

4,356,958

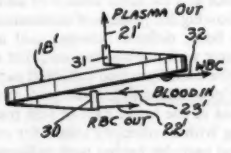
BLOOD CELL SEPARATOR

Theodor Kolobow, Rockville, and Yoichiro Ito, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of Health and Human Services, Washington, D.C.

Division of Ser. No. 817,016, Jul. 19, 1977. This application Nov. 1, 1979, Ser. No. 90,390

Int. Cl.³ B04B *1/00*

U.S. Cl. 233—27 **28 Claims**

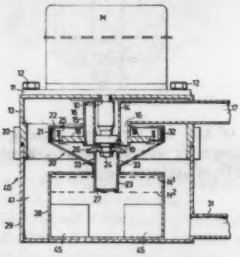


1. A flow-through blood centrifuge apparatus comprising a vertically-mounted centrifugal bowl member mounted on a vertical axis, means for rotating said bowl member about said axis, a rotor chamber disposed substantially concentrically in said bowl member, blood inlet conduit means communicatively connected to said rotor chamber near the periphery thereof for admitting whole blood into said chamber, outlet conduit means, and means to communicatively connect said outlet conduit means to the rotor chamber at a level to collect a selected blood component during a flow-through procedure, wherein said rotor chamber is of substantially helical form having an upper end and a lower end, wherein said chamber is provided at its lower end with an enlargement defining an enclosure, wherein said outlet conduit means includes a flexible tube communicatively connected to the lower portion of said enclosure for collecting red blood cells, and wherein said apparatus includes a flexible tube communicatively connected to the upper end of the chamber for collecting plasma.

4,356,959
METHOD PARTICULARLY INTENDED FOR SEPARATING MERCURY COMPOUNDS AND MERCURY ALLOYS IN SOLID PARTICLE FORM FROM A FLUID, AND AN APPARATUS FOR CARRYING OUT THE METHOD

Jan Rosander, Gothenburg, Sweden, assignor to Scania Dental AB, Knivsta, Sweden

Filed Aug. 8, 1980, Ser. No. 176,463
Claims priority, application Sweden, Aug. 17, 1979, 7906892
Int. Cl.³ B04B *1/00, 7/04*
U.S. Cl. 233—27 **9 Claims**



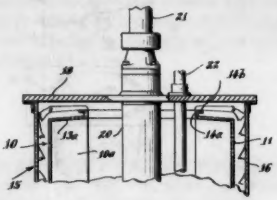
1. An apparatus for separating solid particles, particularly mercury compounds and alloys, from a fluid, such as dental waste water, contaminated therewith, comprising a first vessel, a fluid inlet opening into a first annular space at the upper part of said vessel, an outlet for purified fluid at the lower part of said vessel, a rotatable container in communication with said first annular space to receive contaminated fluid therefrom, a motor having a drive shaft connected to said container centrally thereof for rotating the same, said container having a vertical peripheral wall and an upper horizontal wall depending from the outer periphery thereof to collect particles centrifugally urged thereagainst owing to the rotation of said container, a circular horizontal guide flange fixedly mounted at the bottom of said first annular space and surrounding the latter, said first annular space opening into said container beneath said flange to lead contaminated fluid into said container, said flange leaving a second annular space between the outer periphery thereof and the inner surface of said vertical peripheral wall for allowing the passage of contaminated fluid, a third annular space being defined between said upper horizontal wall and an outer wall surrounding said first annular space to conduct fluid liberated from said collected particles to a fourth annular space communicating with said outlet for purified fluid, and means at the lower part of said rotatable container communicating with a collecting means for recovering a mixture of fluid and particles having been collected at the peripheral part of said container on the cessation of rotation of said rotatable container.

4,356,960
ANTI-DRAG CAP FOR BASKET CENTRIFUGE

Robert B. Carr, Brookline, Mass., and Richard A. Erikson, Poughkeepsie, N.Y., assignors to Alfa-Laval, Inc., Poughkeepsie, N.Y.

Filed May 27, 1980, Ser. No. 153,002
Int. Cl.³ B04B *11/00*
U.S. Cl. 233—46 **3 Claims**

1. In a basket-type centrifuge, a centrifugal basket mounted for rotation about a generally vertical axis and forming an annular chamber surrounding said axis for receiving a mixture of liquid and solids to be separated, the basket having a bottom outlet for discharging separated solids from said chamber and also having a cap forming an overflow outlet for discharging separated liquid from said chamber, said cap including a generally horizontal annular wall overlying said chamber and a generally vertical annular wall protruding upwardly from the radially inner portion of said horizontal annular wall, said cap also including an annular lip extending radially outward from the upper end of said vertical annular wall and overlying only

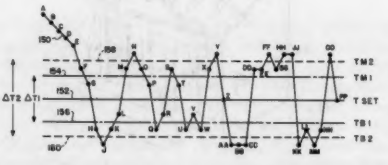


the radially inner part of said horizontal annular wall in spaced relation thereto, whereby said discharging liquid flows upwardly along the radially inner surface of said vertical annular wall and thence radially outward along the upper surface of said lip.

4,356,961
DUAL DEADBAND CONTROL SYSTEM

Gary A. Smith, Plymouth, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Jun. 18, 1981, Ser. No. 274,938
Int. Cl.³ F25B *7/00*; H02J *1/00*
U.S. Cl. 236—1 EA **21 Claims**



1. In a condition control system including a plurality of condition control devices each operable from a first state to a second state to change the condition at a predetermined location, so as to maintain the condition proximate a predetermined value, the improvement comprising:

condition responsive means including a condition sensor positioned at the predetermined location and the condition responsive means operable to produce a first signal which varies with changes of condition sensed by the condition sensor;

control means connected to the condition responsive means to receive the first signal and operable to produce a control signal, the control signal having a first characteristic when the condition sensed by the condition sensor is greater than a first predetermined amount above the predetermined value, having a second characteristic when the condition sensed by the condition sensor is greater than a second predetermined amount above the predetermined value, having a third characteristic when the condition sensed by the condition sensor is less than a third predetermined amount below the predetermined value and having a fourth characteristic when the condition sensed by the condition sensor is less than a fourth predetermined amount below the predetermined value; and

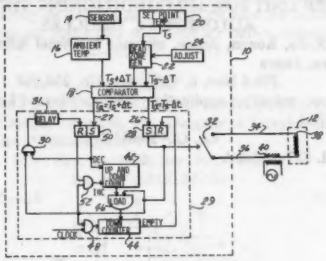
means for connecting the control means to the plurality of condition control devices to present the control signal thereto, a first of the condition control devices being turned from the first state to the second state upon receipt of a control signal of the first characteristic and being turned from the second state to the first state by a control signal of the third characteristic only when no other of the

condition control devices is in the second state, a second of the condition control devices being turned from the first state to the second state upon receipt of a control signal of the second characteristic only when the first condition control device is in the second state, and the second of the condition control devices thereafter being turned from the first state to the second state and from the second state to the first state upon receipt of output signals of the third characteristic and first characteristic respectively so long as the first of the condition control devices remains in the second state.

4,356,962
THERMOSTAT WITH ADAPTIVE OPERATING CYCLE

Michael R. Levine, 2900 Heatherway, Ann Arbor, Mich. 48104

Filed Nov. 14, 1980, Ser. No. 206,761
Int. Cl.³ F23N *5/00*
U.S. Cl. 236—11 **12 Claims**



1. In a thermostat operative to be connected to a temperature modifying apparatus to control the operative state of the apparatus and including means for generating an electrical signal representative of a desired temperature set-point and means for generating an electrical signal representative of the ambient temperature at the thermostat, the improvement comprising: means for generating control signals for the temperature modifying apparatus operative to control it into a state which causes the ambient temperature to move toward the set point and means for adaptively modifying the time of termination of each said control signals as a function of the change in ambient temperature produced the previous time the temperature modifying apparatus was controlled to said state.

4,356,963
FLOW ADJUSTMENT MECHANISM FOR AIR DISTRIBUTION SYSTEMS

Douglas F. Edwards, Jackson County, Mo., and Raymond H. Dean, Shawnee Mission, Kans., assignors to Tempmaster Corporation, Kansas City, Mo.

Filed Aug. 3, 1981, Ser. No. 289,497
Int. Cl.³ F24F *7/06*
U.S. Cl. 236—49 **11 Claims**

8. In an air distribution system controlled by a pneumatic circuit of the type having an inflatable bladder for controlling the distribution of conditioned air, a flexible diaphragm, means for applying pressure to one side of the diaphragm, and thermostat means for controlling the application of pressure to said one side of the diaphragm, the improvement comprising:

a first tube communicating at one end thereof with said bladder;

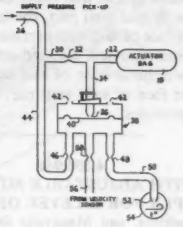
a second tube coupled with said first tube for axial extension and retraction relative thereto and in fluid communication therewith;

a control orifice in said second tube adjacent a side of said diaphragm opposite said one side thereof, whereby pressure applied to said one side of the diaphragm displaces same toward said control orifice to reduce bleeding of pressure from the bladder;

a substantially flat surface supported in a stationary position and receiving said second tube in extension therethrough;

a cam supported on said flat surface for rotation about the axis of said second tube, said cam having a cam surface inclined relative to said flat surface;

a cam follower carried on said tube at a location offset from the axis thereof;



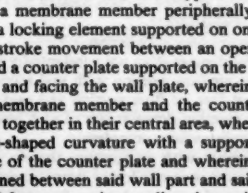
yieldable means for urging said cam follower against said cam surface to effect movement of said control orifice toward and away from said diaphragm in response to turning of said cam; and

an adjustment member carried on said cam at a location offset from the axis of said tube, said adjustment member being in contact with said flat surface and being extensible and retractable relative to said cam to adjust the inclination of said cam surface with respect to said flat surface.

4,356,964
THERMIC CONTROL ELEMENT

Werner Föller, Stuhr, Fed. Rep. of Germany, assignor to Gestra-KSB Vertriebsgesellschaft mbH & Co. KG, Bremen, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,589
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1980, 3027969
Int. Cl.³ F16T *1/10*
U.S. Cl. 236—58 **4 Claims**



1. In a thermic control element of the type including a plate-like wall part, a membrane member peripherally coupled to said wall part, a locking element supported on one side of the membrane for stroke movement between an open and closed end position and a counter plate supported on the other side of said membrane and facing the wall plate, wherein the locking element, the membrane member and the counter plate are rigidly coupled together in their central area, wherein the wall part has a cup-shaped curvature with a support face for a peripheral zone of the counter plate and wherein a receiving chamber is defined between said wall part and said membrane member in which an expansion medium is received, the improvement comprising:

said locking element in its open end position and said wall part being provided with corresponding cooperating, centrally disposed stroke engagement faces which are positioned such that, in the closed end position of said locking element, the axial distance between said stroke

engagement faces of said locking element and said wall part is less than the axial distance between the support faces of the wall part and said peripheral zone of said counter plate so that, under normal operating conditions, only the axial distance between said stroke engagement faces of said locking element and said wall part will be bridged by means of said centrally disposed stroke engagement face of said locking element engaging said stroke engagement face of said wall part in said closed end position thereof and, so that under extreme loads and upon deformation of said wall part, the axial distance between said support face of said wall part and said peripheral zone of said counter plate will also and subsequently be bridged with said peripheral zone of said counter plate engaging said support face of said wall part so that an additional support is provided.

4,356,965

HEATER WITH ADJUSTABLE MIX REGULATING DAMPER FOR BILEVEL OPERATION

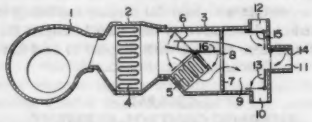
Katsuaki Matsushima, and Masayuki Sakai, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 1, 1980, Ser. No. 192,916

Claims priority, application Japan, Oct. 16, 1979, 54-143372[U]

Int. Cl.³ B60H *1/02*

U.S. Cl. 237—12.3 B 6 Claims



1. An air treatment assembly for treating and controlling an air flow, comprising:

a ducting system, into an upstream portion of which said air flow is introduced;

a heater element mounted at an intermediate portion of said ducting system;

a first damper mounted in said ducting system upstream of said heater element, which divides said air flow into a first air flow portion which passes through said heater element, and a second air flow portion which does not pass through said heater element;

a second damper, mounted in said ducting system upstream of said first and second air outlets and downstream of said heater element, which is movable between:

a first position, wherein:

it divides said first and second air flow portions and hinders them from mixing with one another, said first air flow portion passing past one side of said second damper, and said second air flow portion passing past the other side of said second damper;

and a second position, wherein;

said second damper does not substantially hinder mixing of said first air flow portion with said second air flow portion; said first air flow portion and said second air flow portion meeting downstream of said heater element and mixing substantially completely;

a wall member with an aperture therein, which traverses said ducting system closely downstream of said second damper, said aperture having first and second aperture portions shifted relative to one another in the direction of movement of said second damper so that, when said second damper is in said first position, said first aperture portion is aligned with said one side of said second damper so as principally to receive said first air flow portion, while said second aperture portion is aligned with said other side of said second damper so as principally to receive said second air flow portion and,

first and second air outlets from said ducting system downstream of said wall member, said first outlet being arranged so as principally to pass an air flow from said first aperture portion, and said second outlet being arranged so as principally to pass an air flow from said second aperture portion;

whereby; when said heater element is providing heat to said first air flow portion, by moving said second damper between its said first position and its said second position, primarily warmed air may be obtained from said first air outlet and primarily unwarmed air may be obtained from said second air outlet, or alternatively, when said second damper is in its said second position, air of approximately the same temperature may be obtained from both said first air outlet and said second air outlet.

4,356,966

HEATER UNIT FOR AIR CONDITIONING SYSTEM FOR AUTOMOTIVE VEHICLES

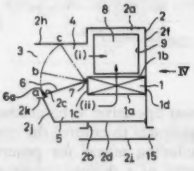
Norio Kado, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1980, Ser. No. 204,608

Claims priority, application Japan, Nov. 17, 1979, 54-159747[U]

Int. Cl.³ B60H *1/02*

U.S. Cl. 237—12.3 A 8 Claims



1. A heater unit for use in an air conditioning system for automotive vehicles. comprising:

a casing having a plurality of peripheral walls including a plurality of vertical walls, said casing having an air inlet formed in one of said vertical walls, said air inlet having an upper edge surface and a lower edge surface, and an upper or face air outlet formed in another one of said vertical walls, said casing further having a defroster air outlet and a flow air outlet formed in at least one of said peripheral walls;

a heater core horizontally disposed within said casing, said heater core being arranged on a line extending from said air inlet at a location substantially remote from said air inlet, said heater core defining a cold air and warm air mixing chamber in a zone immediately above said heater core in cooperation with associated inner wall surfaces of said casing, said upper or face air outlet and said defroster air outlet opening in said chamber, said heater core having a side wall facing said air inlet;

an air-mix damper vertically pivotally mounted to a support on said heater core at a side facing said air inlet, said air-mix damper extending from said heater core to said air inlet and having a free end disposed to be seated selectively on said upper edge surface and said lower edge surface of said air inlet, said lower edge surface of said air inlet being located at a level lower than said free end of said air-mix damper when said air-mix damper is in a horizontal position, said air-mix damper and said heater core defining an upper air passage and a lower air passage for guiding air introduced through said air inlet, in cooperation with associated inner wall surfaces of said casing, said upper air passage extending substantially horizontally from said air inlet to said air mixing chamber, said lower

air passage extending from said air inlet to a lower side of said heater core to guide air introduced therein to enter said heater core through said lower side thereof and flow through said heater core upwardly thereof, whereby cold air delivered to said air mixing chamber through said upper air passage and warm air delivered to said air mixing chamber through said lower air passage and said heater core collide with each other at substantially right angles to be mixed together;

said air-mix damper being supported on said support on said heater core at a location substantially corresponding to the vertical center between an upper substantially horizontal wall defining an upper surface of said upper air passage and a lower substantially horizontal wall defining a lower surface of said lower air passage;

an air guide passage defined by said side wall of said heater core facing said air inlet and associated ones of said peripheral walls of said casing, said air guide passage extending from said air mixing chamber to said floor air outlet; and

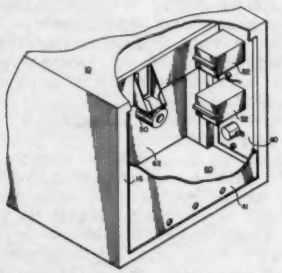
first, second and third dampers provided within said casing for opening or closing said upper or face air outlet, said defroster air outlet and said floor air outlet, respectively.

4,356,967

LABORATORY INCUBATOR CHAMBER SYSTEM

Harold L. Lunick, Lansdale, Pa., assignor to Lunaire Environmental, Inc., Williamsport, Pa.

Filed Sep. 15, 1980, Ser. No. 187,093
Int. Cl.³ A01K *31/20*
U.S. Cl. 237—14 **7 Claims**



1. A device comprising an air tight, sealed compartment for providing an incubation chamber and a sealed control compartment for housing a plurality of control means, said incubation chamber and said control compartment being sealed and insulated from each other by a vertical wall, said control means being coupled to said incubation chamber by way of sensor means and conduit means for providing temperature, humidity and gas variations to said incubation chamber, wherein at least one of said control means is enclosed within a sealed box, said box having all but one of its faces substantially positioned inside said control compartment and one face oriented to the outside, said face having removable means to provide easy access and removal of said control means without affecting the environment within said incubation chamber and said control compartment.

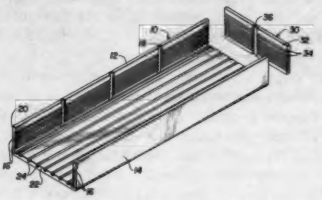
4,356,968

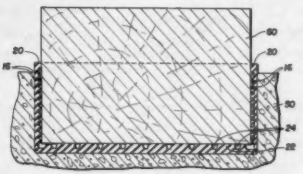
RAILROAD TIE COVER

John L. Harmsen, Vienna, Va., assignor to Stedef S.A., Saint-Cloud, France

Filed Oct. 10, 1980, Ser. No. 195,921
Int. Cl.³ E01B *26/00*
U.S. Cl. 238—1 **11 Claims**

1. A railroad tie cover for imparting resiliency to a track system while prolonging the life of a tie comprising a substantially rectangular sheet formed of an elastomer material having a first surface adapted to contact a railroad tie and a second surface opposite said first surface said surfaces providing a center portion of a cross sectional thickness of from about ⅜ to ¾ of an inch and a first side and a second side having a cross sectional thickness less than said center portion said sides





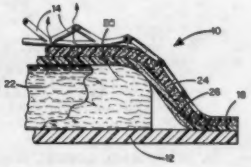
connected to said center portion and adapted to deform so as to orient said first surface of said first and second sides to an angle of about 90 degrees to said first surface of said center portion said first surface having disposed therein a plurality of longitudinal grooves substantially parallel to said sides and spaced at about ¼ to 1 inch from each other and to a depth of about ¼ to ¾ of an inch.

4,356,969

VAPOR DISPENSER AND METHOD OF MAKING SAME

Arthur S. Obermayer, Newton, and Larry D. Nichols, Arlington, both of Mass., assignors to Moleculon Research Corporation, Cambridge, Mass.

Filed Nov. 1, 1976, Ser. No. 737,324
Int. Cl.³ A61L *9/04*
U.S. Cl. 239—6 **29 Claims**



1. A vapor-dispenser product which comprises in combination:

(a) a reservoir means comprising a nonflowing, volatile, liquid material therein whose vapor is to be dispensed into the environment;

(b) a cover means completely surrounding the reservoir means, at least part of which cover means comprises a thin, overlay, inert, polymeric, surface-membrane material to define a vapor-emitting surface, the overlay membrane material characterized by an ability to absorb preferentially the volatile liquid material from the reservoir

and a plurality of generally uniformly distributed, open-cell-type pores through the membrane material and distributed over the vapor-emitting surface, the pores filled with liquid from the reservoir, so as to permit vaporization of the liquid from the liquid-filled pores of the surface, the liquid material within the pores of the membrane having a mobility to pass in the liquid phase through the pores of the membrane, the pore size sufficiently small to prevent leakage of nonvaporized liquid from the membrane surface and to ensure nondepletive replenishment of the liquid within the membrane from the liquid within the reservoir means; and

(c) a thin overlay material over the vapor-emitting surface comprising a macroporous sheath material, to control the rate of evaporation of the volatile material from the reservoir, whereby the material in the reservoir means is conveyed as liquid through the pores of the surface-membrane material and vaporized from the vapor-emitting surface into the atmosphere at a controlled rate and constantly replenished by liquid from the reservoir means.

4,356,970

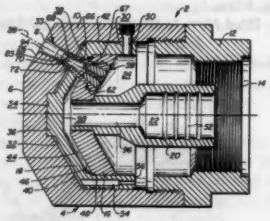
ENERGY SAVING FUEL OIL ATOMIZER

Ralph R. Vosper, San Jose, and Norman E. Harthun, San Carlos, both of Calif., assignors to Coen Company, Inc., Burlingame, Calif.

Continuation-in-part of Ser. No. 40,390, May 18, 1979, Pat. No. 4,303,386. This application Mar. 20, 1980, Ser. No. 131,988

Int. Cl.³ B05B *7/10*; F23D *11/12*

U.S. Cl. 239—8 **38 Claims**



1. A method for introducing atomized liquid fuel into a furnace for combustion therein, the method comprising the steps of forming a core stream of a pressurized gas; forming a combined fuel and core stream by introducing at least two separate streams of the liquid fuel tangentially into the core stream, the fuel streams each lying within a plane radial to the core stream; forming an annular envelope stream of pressurized gas about the combined fuel and core stream; coaxially passing the combined fuel and core stream and the envelope stream through a common conduit; and thereafter substantially simultaneously discharging from the conduit into an enlarged space all streams; whereby the core stream and the envelope stream atomize the liquid fuel while contact between the liquid fuel and walls of the conduit is prevented.

4,356,971

METAL SPRAYING APPARATUS

Stewart J. Ashman, Dudley, England, assignor to Metallisation Limited, Dudley, England

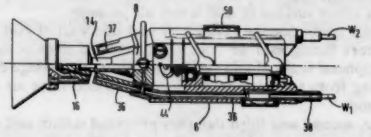
PCT No. PCT/GB79/00151, § 371 Date May 12, 1980, § 102(e) Date May 12, 1980, PCT Pub. No. WO80/00544, PCT Pub. Date Apr. 3, 1980

PCT Filed Sep. 14, 1979, Ser. No. 148,920

Claims priority, application United Kingdom, Sep. 14, 1978, 36908/78

Int. Cl.³ B05B *7/22*

U.S. Cl. 239—84 **12 Claims**



1. Apparatus for applying a coating of metal to a surface, and comprising:

(a) a metal spraying device comprising a body, an air motor mounted on the body for simultaneously feeding two metallic wires through guide passages in the body which guide passages converge forwardly in the direction of wire feed, connecting means for connecting an electric potential across said wires to cause an arc to be established between the wires where they emerge from said guide passages so as to melt the wires, and delivery means in the body through which an air jet may be directed from the body towards the point of convergance of the wires and the arc therebetween so as to cause molten metal droplets to be carried away from the arcing zone on the air jet from the device towards the surface to which a coating of metal is to be applied; and

(b) a supplying device, adapted to supply electricity and air under pressure to the device;

wherein the spraying device is connected to the supplying device by conduits through which electric power and air under pressure are supplied to the device, the air under pressure being supplied in sufficient quantity for the establishment of the air jet and for the operation of the air motor and wherein the spraying device comprises a valve on the body which may be operated to cut off the air jet, and the supplying device has associated therewith control means which is responsive to operation of the valve to cut off the air jet to cut off the supply of electricity to the device, but which does not respond to termination of operation of the air motor to cut off the supply of electricity to the device.

4,356,972

IRRIGATION SYSTEM AND CONSTANT VOLUME SPRINKLER HEAD THEREFOR

Merle A. Vikre, 32 Windward Way, Gulf Harbors, New Port Richey, Fla. 33552

Continuation of Ser. No. 69, Jan. 2, 1979, abandoned, which is a continuation-in-part of Ser. No. 765,266, Feb. 3, 1977, abandoned. This application Oct. 20, 1980, Ser. No. 199,094

Int. Cl.³ B05B *1/32*

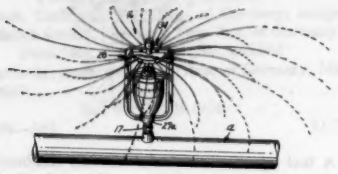
U.S. Cl. 239—177 **38 Claims**

1. A spray head device for distributing a spray of water, comprising:

(a) enclosed housing means defining an internal chamber, a fluid inlet adapted for connection to a source of water for receiving water into the chamber, and an outlet constructed and arranged to issue a jet of water therefrom, the transverse dimension of the internal chamber being large in comparison with the transverse dimension of the inlet and outlet;

(b) volume control means disposed in the internal chamber for controlling the jet of water so that the volume output from the outlet is substantially constant;

(c) a wall member projecting internally into the chamber from the housing outlet in encircling relation thereto and in general alignment therewith, the wall member defining an open free end through which water is received from the inlet, said wall member at its free end having an internal transverse dimension larger than the transverse dimension of said inlet and outlet, and said wall member being spaced from the internal wall of the internal chamber to define a dead ended annular space therwith in which air



may be caught to act as a shock absorbing cushion to incoming water;

(d) dispersing wheel means disposed for impingement by the jet of water and constructed to disperse the water outward into a substantially circular flow pattern;

(e) frame means carried by the housing means for carrying the dispersing wheel means in overlying relation to the outlet;

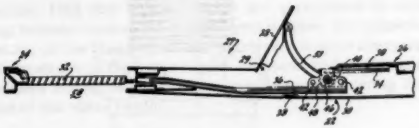
(f) the frame means comprising opposed side members interconnected by a top member that carries the dispersing wheel means, the side members having inner longitudinal edges that taper to a point, whereby obstruction of the circular flow pattern is minimized.

4,356,973

THRUST REVERSER GEARED LINKAGE

Dale W. R. Lawson, Bonita, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Jul. 7, 1980, Ser. No. 166,316
Int. Cl.³ F02K 1/62
U.S. Cl. 239—265.31 **6 Claims**



1. An improved thrust reversing apparatus for reversing the gas stream of a fan jet engine having a primary plug surrounded by cowl and forming a duct therebetween, said cowl having a fixedly positioned forward section and an aft translatable section comprising:

a plurality of rotatable blocker doors associated with the aft translatable cowl section for substantially reversing the normal rearward flow of said gas stream when rotated to a deployed position and defining a portion of the duct when in a stowed position; and

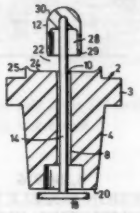
mechanism for rotating each of said plurality of blocker doors, said mechanism comprising a pinion gear rotatable about an axle shaft, a pair of opposing gear racks for engagement with said pinion gear, one of said gear racks fixedly attached to the forward cowl section, and the other gear rack carried by said aft translatable cowl section, and at least one link member pivotably attached at one end to said axle shaft and at the other end to one of said plurality of blocker doors, whereby the translation of said aft translatable cowl section rotates said pinion gear on said racks about said axle shaft causing said at least one link member to rotate its associated blocker door into said duct.

4,356,974

SPRAY NOZZLES

Peretz Rosenberg, and Avner Rosenberg, both of Moshav Beit Shearim, Israel

Continuation-in-part of Ser. No. 88,071, Oct. 24, 1979, abandoned. This application Jan. 27, 1981, Ser. No. 228,759
Int. Cl.³ B05B 1/26
U.S. Cl. 239—382 **10 Claims**



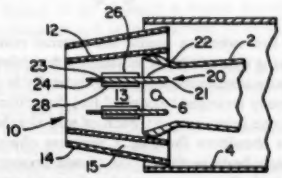
1. A spraying device comprising a nozzle formed with an outlet orifice through which the fluid issues in the form of a jet, a cup-shaped member having an open end supported close to and in alignment with said orifice so as to be impinged by the jet issuing therefrom, said cup-shaped member being floatingly mounted with respect to the nozzle so as to be movable both in a lateral direction with respect to said orifice and in an axial direction towards and away from said orifice, and limiting means limiting the floating movements of the cup-shaped member with respect to the nozzle orifice, the open end of the cup-shaped member facing the orifice being defined by a thin, substantially cylindrical wall whose thickness is a small fraction of the diameter of its open end, the inner diameter of the cup-shaped member being slightly larger than the sum of the outlet orifice diameter and the maximum lateral movement permitted by the limiting means, the surface of the nozzle facing the cup-shaped member around the nozzle orifice being substantially flat.

4,356,975

NOZZLE TIP FOR PULVERIZED COAL BURNER

Roman Chadshay, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 7, 1980, Ser. No. 128,204
Int. Cl.³ F23D 13/36
U.S. Cl. 239—419.5 **8 Claims**



1. A nozzle tip for a burner on a pulverized coal-fired furnace, said nozzle tip of the type having: an open-ended outer shell spaced from and surrounding said inner shell, so as to define an annular flow passageway therebetween through which additional air is directed into the furnace; and a splitter

plate positioned within said inner shell along a line parallel to the longitudinal axis thereof so as to divide the inner shell into a plurality of flow passages, wherein said splitter plate comprises a first portion of abrasion resistant material disposed within said inner shell with its leading edge at the inlet end of the nozzle tip and extending a substantial distance into said inner shell along a line parallel to the longitudinal axis thereof; and a second portion of heat resistant material disposed within said inner shell so as to abut the trailing edge of said abrasion resistant plate and extend therefrom toward the discharge end of said nozzle tip along a line parallel to the longitudinal axis of said inner shell.

4,356,976

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

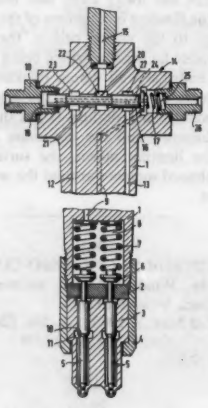
Ewald Eblen, and Odon Kopse, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 28, 1980, Ser. No. 201,636

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943896

Int. Cl.³ F02M *45/08*

U.S. Cl. 239—533.5 7 Claims



1. A fuel injection nozzle for internal combustion engines comprising a nozzle body including a fuel inlet line and having two nozzle needles disposed longitudinally in said nozzle body and thereby arranged to control fuel flow from the inlet line to at least one injection port, each of said nozzle needles having pressure shoulders thereon, a pressure chamber disposed in said nozzle body in the region of said pressure shoulders and further including a separate inlet channel communicating with each of said pressure chambers, at least one of which is arranged to communicate with said fuel inlet line via a slide valve means as needed, characterized in that said slide valve means is embodied as a 3-way valve provided with a slide, by means of which said fuel inlet line can be made to communicate with at least one of said separate inlet channels to said pressure chambers in said nozzle body.

4,356,977

FUEL INJECTION NOZZLE

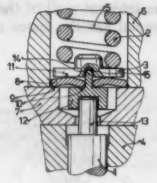
Karl Hofmann, Remseck, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 18, 1981, Ser. No. 235,451

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006390

Int. Cl.³ F02M *61/20*

U.S. Cl. 239—533.9 11 Claims



1. A fuel injection nozzle for internal combustion engines having a radially sealing valve needle axially displaceable by the fuel supplied under pressure and arranged to open in the opposite direction to the fuel flow, said valve needle stressed in the closing direction by a closure spring engaging the valve needle via a spring support plate, characterized in that at least two levers have portions arranged to contact a shelf area of an apertured member which encircles an area of said valve needle and another of said portions of said levers engage said spring supporting plate.

4,356,978

FUEL INJECTION VALVE AND A METHOD FOR MANUFACTURING A FUEL INJECTION VALVE

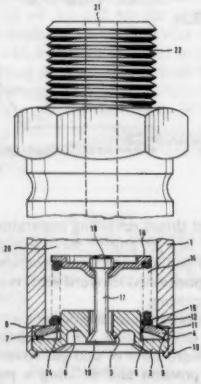
Rudolf Krauss, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 5, 1980, Ser. No. 184,507

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936332

Int. Cl.³ B05B *1/32*

U.S. Cl. 239—533.12 9 Claims



1. A fuel injection valve having an axis and comprising a closing body disposed in a nozzle holder and arranged to control a fuel outlet, said closing body being suspended in the manner of a pendulum and arranged to protrude through a nozzle body and cooperate with a valve seat in said nozzle body, said closing body arranged to open in a direction counter to the force of a closing spring supported at one end on a spring plate engaging said closing body, characterized in that said closing spring rests at an opposite end on an elastically deform-

able shaped disc which is partially braced in an axial direction between the nozzle body and the nozzle holder and is deformed at least partially in the axial direction in such a manner that, viewed in the radial direction, outer and inner regions of the shaped disc lie in different planes, said shaped disc being axially deformable by means of axial displacement of said nozzle body whereby the force of said closing spring is variable.

4,356,979

FUEL INJECTION NOZZLE

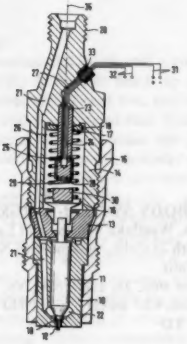
Klaus Dobler, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,866

Claims priority, application Fed. Rep. of Germany, May 22, 1979, 2920669

Int. Cl.³ B05B *1/30*

U.S. Cl. 239—585 **11 Claims**



1. A fuel injection nozzle for internal combustion engines comprising a spring-loaded valve needle for regulating the onset of fuel injection, a spring retainer means, a Hall transducer for indicating the onset of the fuel injection and/or the length of the fuel injection, said Hall transducer including a stationary Hall chip secured within and surrounded by said spring retainer means, and a permanent magnet, the magnetic influence on the Hall chip of said permanent magnet changing with the stroke of the valve needle, characterized in that said permanent magnet is disposed in a position not hindering the stroke of the valve needle.

4,356,980

ELECTROMAGNETICALLY ACTUATABLE VALVE

Rudolf Krauss, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

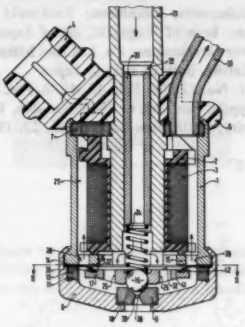
Filed Sep. 11, 1980, Ser. No. 186,064

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936853

Int. Cl.³ F16K *31/06*; F02M *37/00*

U.S. Cl. 239—585 **8 Claims**

1. An electromagnetically actuatable fuel injection valve for fuel injection systems of internal combustion engines having a housing, a magnetic element in said housing, a flat armature positioned relative to said magnetic element for operation by said magnetic element, a movable valve element secured to said flat armature and arranged to cooperate with a fixed valve seat in said housing, characterized in that a remnant air disc of non-magnetic material is disposed within said housing between said flat armature and said magnetic element, said remnant air disc further including at least four spring tongues arranged to



guide said flat armature and urge (it) said valve element in a closing direction of said valve seat.

4,356,981

AEROSOL DISPOSAL UNIT

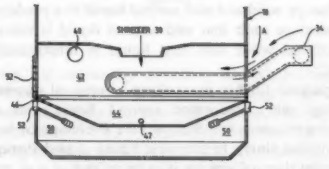
Frank N. Meadows, High Wycombe, England, assignor to Hoveringham Group Limited, Nottinghamshire, England

Filed May 6, 1980, Ser. No. 147,204

Claims priority, application United Kingdom, May 9, 1979, 7915963

Int. Cl.³ B02C *19/12*

U.S. Cl. 241—16 **11 Claims**



1. A method of disposing of containers for aerosols, inflamable gases and toxic chemicals comprising the steps of:

destroying said containers, by puncturing or otherwise, within an enclosure;

separating fluid and gases initially contained within said containers from the destroyed containers;

drawing a stream of air through a region having said destroyed containers and separated fluid to an exhaust outlet;

said stream of air being sufficient to dilute any gases released by destruction of the containers to a level below the flash point of the gas and air mixture;

conveying the destroyed containers on a continuous belt to a location outside said enclosure;

draining through said continuous belt fluids separated from the containers during destruction;

collecting the drained fluids into a bath below said continuous belt;

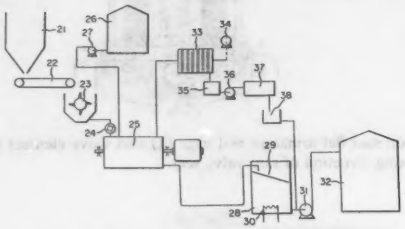
heating the fluids drained into said bath;

otherwise sealing said enclosure against the egress of gas at normal operating temperatures and pressures from said enclosure.

4,356,982
APPARATUS AND PROCESS FOR PRODUCING SLURRY

Yasuyuki Nakabayashi, Yokohama; Yoshiyuki Matsuno, and Kihei Katsuta, both of Nagasaki, all of Japan, assignors to Electric Power Development Co. Ltd. and Mitsubishi Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Division of Ser. No. 12,900, Feb. 16, 1979, Pat. No. 4,262,850.
This application Oct. 6, 1980, Ser. No. 194,278
Claims priority, application Japan, Feb. 23, 1978, 53-20559
Int. Cl.³ B02C *23/36*
U.S. Cl. 241—17 10 Claims



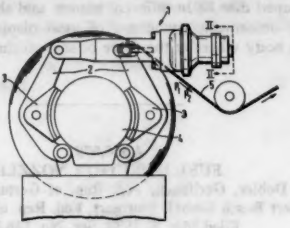
1. An apparatus for producing slurry comprising:
a mill;
a storage tank;
a liquid feed means for feeding a first liquid from said storage tank into said mill;
a solid feed means separate from said liquid feed means for feeding a lumpy solid into said mill, said lumpy solid containing a second liquid therein;
said mill having a crushing, mixing and stirring means for crushing said lumpy solid in the presence of said first liquid and mixing said crushing lumpy solid and said first liquid to produce a slurry;
said mill having a heating means for heating said slurry and said lumpy solid and said second liquid to a predetermined temperature such that said second liquid is substantially evaporated while said first liquid is substantially unaffected;
said apparatus further comprising a removal means for removing said evaporated second liquid and a heat-exchanger means for effecting the exchange of heat from said heated slurry to said first liquid in said storage tank, whereby thermal energy is economized.

4,356,983
DEVICE FOR BRAKING WINDING CORES

Peter Weiss, Neuss, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,529
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939202
Int. Cl.³ B65H *23/06*
U.S. Cl. 242—75.4 4 Claims

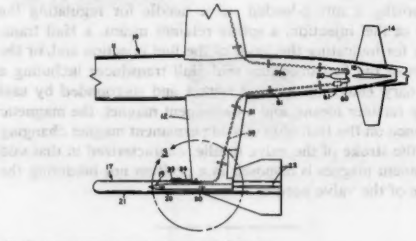
1. In a braking device for winding cores for webs of material to be unwound with varying web tension of the type having a pressure medium actuated cylinder-piston unit controlling brake shoes which act upon the chucking tensions for the winding core, the improvement wherein the cylinder-piston unit comprises a cylinder housing, at least two pistons, means mounting the pistons in longitudinal alignment in the housing with their axes coincident in the operating direction and abutting on each other in their rest positions and means for applying pressure medium to either piston individually and in tandem to obtain different braking forces.



4,356,984
TOW BODY SYSTEM-TARGET DRONE

Robert N. Worth, Westlake Village, and Larry T. Parson, Thousand Oaks, both of Calif., assignors to Northrop Corporation, Hawthorne, Calif.

Filed Feb. 25, 1980, Ser. No. 124,499
Int. Cl.³ B64D *3/00;* F41J *9/10*
U.S. Cl. 244—1 TD 8 Claims



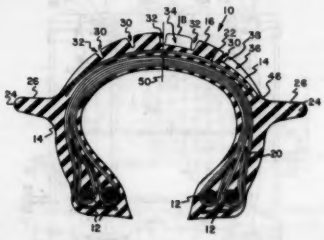
5. A tow target system comprising:
a carrier aircraft;
a tow body;
a tow line attachment member mounted on the tow body;
a tow line connected between the carrier aircraft and the tow line attachment member;
means for disconnecting the tow line from the carrier aircraft;
means for deploying a landing recovery system carried in the tow body;
wherein said tow line attachment member is slidably mounted on said tow body so as to allow rearward movement of said slidable attachment member in response to aerodynamic forces on said tow line caused by its wind resistance after its disconnection from the carrier aircraft; and
means for activating said deploying means in response to rearward movement of said slidable member.

4,356,985

AIRCRAFT TIRE

Robert W. Yeager, Akron, and Larry J. Gehrett, Atwater, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 26, 1981, Ser. No. 238,317
Int. Cl.³ B60C 13/00; B64C 25/32
U.S. Cl. 244—103 R 10 Claims



1. A tire comprising:

a pair of circular inextensible beads and a pair of sidewalls extending outwardly from said beads to a tread which extends circumferentially of said tire, said tread having a radially outer ground-engaging surface determined by the portion of said tread which touches the ground in the footprint of the tire when the tire is under rated load and pressure while said sidewalls do not touch the ground under such conditions, an integrally molded liquid-deflecting means extending axially outward from at least one sidewall and spaced radially from said ground-engaging surface of the tread when the tire is mounted on a vehicle under rated load and pressure, said tread being provided with a plurality of tread elements separated by a first plurality of interconnecting grooves, said first plurality of interconnecting grooves comprising a plurality of circumferential grooves spaced apart over the width of the tread which are interconnected by a plurality of transverse grooves which extend to said sidewalls for channeling water toward the edges of said tread as determined by the maximum width of the tire's footprint, and a second plurality of grooves disposed axially outwardly, with respect to the axis of rotation of the tire, of the first plurality of interconnected grooves, said second plurality of grooves communicating at one end with the first plurality of grooves and extending along the respective sidewall toward the respective liquid-deflecting means to channel water from the first plurality of interconnecting grooves toward the respective liquid-deflecting means.

4,356,986

SAFETY VALVE SUPPORT

Hugh C. Lynch, P.O. Box 30112, AMF, Memphis, Tenn. 38130

Filed Sep. 9, 1981, Ser. No. 300,651
Int. Cl.³ F16L 5/00
U.S. Cl. 248—57 2 Claims

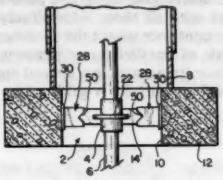
1. An anchor for supporting a safety valve in a space between two opposed surfaces, comprising:

an elongate generally C-shaped channel having a spaced pair of flanges integrally connected by a web,

means for mounting a safety valve on the channel between opposite ends thereof,

a pair of slides slidably engaging over opposite end portions of the channel, each slide comprising a spaced pair of generally C-shape flanges integrally connected by a web and inwardly extending lips on the free edges thereof,

the webs and channels of the slides slidably engaging over the flanges and web of the channel and the lips on the slide flanges engaging over free edges of the channel flanges,



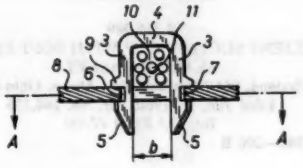
and screw means engaging between the channel and the slides for driving the slides outwardly whereby to jam the slides against the surfaces of opposed sides of the opening.

4,356,987

SUPPORT CLIP FOR ELECTRICAL CONDUCTORS OR TUBES

August Schmid, Schwerzenbach, Switzerland, assignor to Patentverwertungs-und Finanzierungsgesellschaft SERANIA AG, Glarus, Switzerland

Filed Apr. 27, 1981, Ser. No. 257,926
Claims priority, application Switzerland, Apr. 28, 1980, 3246/80
Int. Cl.³ F16L 3/08
U.S. Cl. 248—73 3 Claims



1. A clip for releasably attaching electrical conductors, wires, or hose means to a support, comprising a bail made of plastics material and having two legs (3) and a crosspiece (4) elastically interconnecting the legs at one end thereof for elastically moving the legs toward each other for inserting the legs into a bore in a support, each leg having a free end with an outside taper facing away from the respective opposite leg, said legs normally extending substantially in parallel to each other at a given spacing (b) from each other, each leg having an outwardly facing groove (6) and a shoulder (9) adjacent to the respective groove on the side of the groove nearest said crosspiece (4), each of said grooves having an outwardly curved bottom for insertion into a round bore, whereby said legs and the crosspiece confine together with a support a space for holding conductors, wires or hose means.

4,356,988

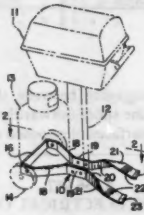
BASE STRUCTURE FOR BARBECUE GRILL

Lawrie McIntosh, Toronto, Canada, assignor to Shepherd Products Ltd., Canada

Filed Sep. 2, 1980, Ser. No. 182,947
Int. Cl.³ A47K 1/04
U.S. Cl. 248—129 1 Claim

1. A generally horizontally disposed one piece base frame structure for a barbecue grill including an open framework formed integrally from a single metal plate disposed edgewise vertically, said frame being shaped adjacent one end of the frame to form an opening receiving a container, said opening in the frame being triangular and providing a three sided support

structure for the container affording a three point support, said three point support having a cross piece forming an end of the base frame structure and comprising one side of said three sided structure, converging side frame portions defining two of said three sides with all three sides closely engaging a base member on the container where the container fits into support structure, a pair of parallel frame portions intermediate the length of the base frame structure spaced apart to receive and secure a vertical support for a grill, a pair of divergent leg



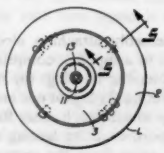
members extending outwardly from the intermediate frame portions, said leg members each having an outwardly sloping portion bent on an angle from the respective members and a generally horizontally disposed supporting foot extending outwardly from each sloping portion for engagement with a supporting surface, said divergent leg members each formed with a twisted area from said vertical edgewise position to respective positions substantially at right angles thereto to provide said horizontally disposed foot portions.

4,356,989

RESILIENT SUCTION CUP WITH SOFT PLIABLE SEALING GASKET

Jack W. Ireland, 664 Merriman Rd., Akron, Ohio 44303

Filed Jun. 30, 1980, Ser. No. 164,235
Int. Cl.³ F16B *47/00*
U.S. Cl. 248—206 R **6 Claims**



1. A generally conical suction cup of resilient rubber-like material having affixed on the peripheral portion of its suction side a ring gasket of non-resilient putty-like material adapted to form a vacuum-tight space therewith when pressed against a rigid non-porous surface despite irregularities or imperfections in such surface; said gasket being affixed to said suction cup by an annular adhesive film thereon bonded to an adhesive film on said peripheral portion of the suction side of said suction cup.

4,356,990

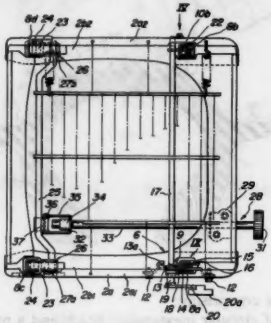
DEVICE FOR VERTICALLY ADJUSTING SEAT

Kenichi Sakurada, Yokohama, and Ryuichi Nishino, Hachioji, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Tachikawa Spring Company Limited, Akishima, both of, Japan

Filed Feb. 5, 1980, Ser. No. 118,737
Claims priority, application Japan, Feb. 9, 1979, 54-16452[U]
Int. Cl.³ B60N *1/02*
U.S. Cl. 248—396 **3 Claims**

1. A device for vertically adjusting a seat having a seat cushion and a support in the form of a seat slide separate from the cushion, there being front vertically adjusting means for vertically adjusting the front side of said seat cushion, the device comprising:

rear vertically adjusting means including at least one bell crank and rotary holding means, said bell crank including a pair of opposed ends and an angled portion therebetween, one end of the bell crank being pivotally coupled to said support and the other end being coupled to said rotary holding means



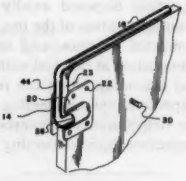
and the angled portion being pivotally coupled to a rear side of said seat cushion, said rotary holding means being carried by said seat cushion and rotating and holding said bell crank at a desired angular position, said seat cushion being slightly movable horizontally relative to said support during vertical adjustment and the vertical adjustment of the rear side of the seat cushion being effected independantly from the front side of the seat cushion.

4,356,991

PORTABLE BOARD FOR STUDY, WRITING AND READING

Robert B. Hutchinson, Box 938, 710 County Rd., Pocasset, Mass. 02559

Filed Jul. 21, 1980, Ser. No. 170,455
Int. Cl.³ A47B *23/00*
U.S. Cl. 248—463 **1 Claim**



1. A portable board fitted with means to a be mounted so as to lie at an inclined angle to a horizontal surface, on which it rests, said means comprising a bail mounted by pivotal means to the board, together with:

first latch means to positively latch the bail in a first closed position, in which the bail lies substantially in the plane of the board, and together with second latch means to positively latch the bail in an open position, in which

the first latch means comprise a pair of plates that extend from opposite faces of the board beyond an edge of the board, with the said plates spaced apart by the general thickness of the bail, which bail may fit between the extended sections of said plates, in which

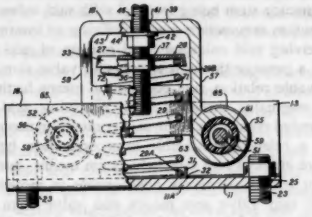
the second latch means comprises a slot in one of said plates, which slot extends from a side of the board to the side of an extended portion of the plate, said slot of a size to enable a side of the bail to rest in said slot.

4,356,992

EARTHQUAKE PROTECTED VIBRATION ISOLATOR

Donald E. Benkert, 1234 Blair Ave., South Pasadena, Calif. 91030

Filed Aug. 29, 1980, Ser. No. 181,049
Int. Cl.³ F16F 1/06
U.S. Cl. 248—578 17 Claims



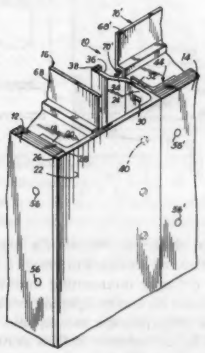
1. A vibration isolated mounting device for equipment to be secured to a load supporting surface and comprising a lower member adapted to be secured to said load supporting surface, horizontally separated pairs of spaced, parallel jaws fixed to said lower member, at least one resilient load supporting column bearing on said lower member, an upper member adapted for attachment to said equipment and bearing upon said resilient column, transversely extending horizontal restraint members secured each in a pair of jaws, a downwardly extending looping surface secured to each end of said upper member and oriented about one of said restraint members, and means for adjusting the compression load of said resilient column.

4,356,993

CORNER FORMING APPARATUS FOR A CONCRETE WALL FORM

Anthony J. Gallis, Lake Hiawatha, N.J., and Prabh S. Ahluwalia, Brooklyn, N.Y., assignors to Harsco Corporation, Camp Hill, Pa.

Filed Jan. 15, 1981, Ser. No. 225,203
Int. Cl.³ B28B 7/00, 7/34
U.S. Cl. 249—27 23 Claims



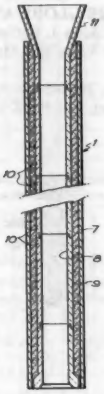
1. An inside corner concrete forming member adapted for mounting on a free end of a first wall form panel and on at least one panel-support beam member fixed to such panel, said corner forming member being substantially L-shaped and having a seating flange projecting inwardly generally at right angles from an intermediate location along one leg of said L-shaped member, the extension of that portion of said one leg beyond said seating flange being substantially equal to the thickness of said panel and being adapted to shield said free end of said panel when the latter is seated at right angles to said one leg on said seating flange with said end abutting said extension; said other leg of said L-shaped member being adapted to be secured to said panel-support beam member and having first fastening means adapted for use in securing a separate wall form panel to said other leg such that the outer surface of said other panel and the outer surface of said one leg are substantially coplanar, and a second portion of said other leg for engaging said beam member and being inwardly offset sufficiently to afford stripping clearance back over said beam member by said other panel.

4,356,994

HOLLOWARE FOR UPHILL TEEMING

James M. Thornton, Sheffield, England, assignor to Dyson Refractories Limited, England

Filed Dec. 18, 1979, Ser. No. 104,915
Claims priority, application United Kingdom, Dec. 27, 1978, 50008/78
Int. Cl.³ B22D 41/08
U.S. Cl. 249—109 20 Claims



1. Units of an uphill teeming system for free pouring of molten-ferrous metal or the like at atmospheric pressure and molten metal temperatures, each said unit comprising a continuous unitary outer casing, an inner refractory liner in said outer casing, and refractory insulating material between said outer continuous casing and inner refractory liner, each said unit being preassembled and self-supporting as a complete unit adapted for delivery to a casting bay for incorporation in said uphill teeming system, said outer continuous casing being substantially tight against said inner refractory insulating material substantially along the length and around the circumference so as to retain said inner refractory liner and said refractory insulating material in position and resist cracks to thereby assist in substantially reducing inclusions in the metal being poured.

4,356,995

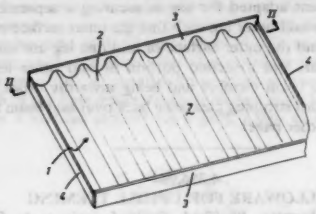
STORAGE CARRIER FOR FERMENTATION INTERRUPTERS

Gerd Lohner, Schulstrasse 9, D-5480 Remagen 3, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 291,082
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029919
Int. Cl.³ B29C 1/00
U.S. Cl. 249—112 5 Claims

1. Storage carriers for the use in fermentation interrupters and for the production of rolls or similar products with a

pattern, characterized by that the storage carrier is having a supporting framework (5) with deepenings (2) for taking up of



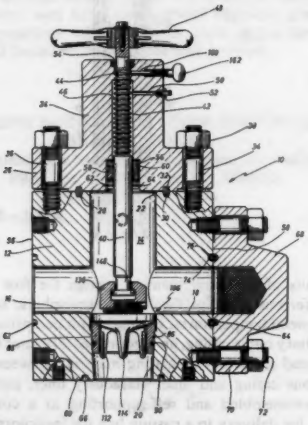
dough crudes as well as a textile cover (7), and that between the supporting framework (5) and the textile cover (7) there is arranged a foam plastic layer or lining (6).

4,356,996

HIGH PRESSURE GLOBE AND CHECK VALVE

Morris B. Linder, and John J. Beffano, both of Houston, Tex., assignors to Quality Valve and Machine Works, Inc., Houston, Tex.

Filed Sep. 29, 1980, Ser. No. 191,663
Int. Cl.³ F16K *15/18*
U.S. Cl. 251—82 11 Claims



1. A high pressure globe and check valve mechanism for use in choke manifolds and the like, said valve mechanism comprising:

valve body means defining a generally culindrical valve chamber and forming inlet and outlet passage means intersecting in substantially normal relation, one of said inlet and outlet passage means being of tapered configuration and defining a seat stop shoulder;

valve stem means extending into said valve chamber and defining an enlarged head portion;

valve seat means within said valve body and defining a flow port in communication with said inlet and outlet passage means, said valve seat means being externally tapered and being received in tight fitting relation by said tapered passage, said valve seat means being sealed with respect to said tapered passage by resilient sealing means and defining external shoulder means seating against said stop shoulder means and annular seat surface means of partially spherical concave configuration;

a valve element being positioned within said valve chamber and being movable from a closed position where said valve element establishes sealing engagement with said valve seat means and blocks the flow of fluid through said flow port means, and an open position, where said valve element is in spaced relation with said valve seat means and flow of fluid through said flow port is allowed, said valve element defining a substantially spherical convex rigid sealing portion and a resilient outer peripheral sealing portion for sealing engagement with said seat surface, said valve element further defining an externally threaded connector stem being integral with said valve element;

lost-motion connection means defining an internal chamber receiving said enlarged head portion of said valve stem and a passage through which said valve stem extends in movable relation, said connection means further defining an internally threaded bore receiving said externally threaded connector stem, said connection means establishing a relatively movable interconnection between said valve element and said valve stem means, said valve element being selectively positionable in movable relation with said valve seat means and valve stem means for unidirectional flow check valve actuation and being selectively positionable in immovable relation with said valve seat means for blocking flow through said flow port in either direction;

retainer plate means overlying said resilient outer peripheral sealing portion; and

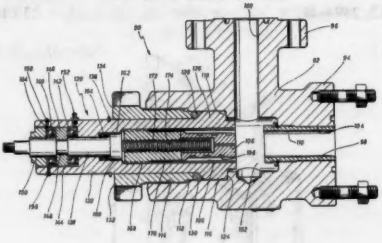
retainer means maintaining said retainer plate means in said overlying relationship with said resilient outer peripheral sealing portion, said retainer means being secured in retaining relationship with said retainer plate means by said lost-motion connection means.

4,356,997

FLOW CONTROL MECHANISM FOR HIGH PRESSURE WELLS

John J. Beffano, Houston, Tex., assignor to Quality Valve and Machine Works, Inc., Houston, Tex.

Filed Sep. 29, 1980, Ser. No. 191,662
Int. Cl.³ F16K *47/04*
U.S. Cl. 251—214 15 Claims



1. A flow control choke mechanism for high pressure well service, said flow control mechanism comprising:

a body strucure defining intersecting inlet and outlet flow passage means and an access opening in substantial alignment with said inlet passage means, said body structure being adapted for connection in flow controlling relation with a wellhead assembly;

a flow bean being positioned within said inlet passage means and defining a restricted passage through which production fluid flows;

a closure element being positioned within said access opening of said body structure and having an enlarged inner extremity defining an external frusto-conical seat surface facing outwardly;

an annular metal seal element being received within said body structure and positioned about said closure element, said metal seal element having a maximum hardness of 120

brinnel and being formed to define an internal frusto-conical sealing surface facing inwardly and being of differing angle as compared to the angle of said external frusto-conical sealing surface of said closure element, said metal seal element also being formed to define an annular abutment surface, the radially outer portion of said internal frusto-conical surface establishing line contact with said external fruso-conical surface upon initial engagement and said seal element being deformable upon high mechanical loading to establish surface contact between said internal and external frusto-conical surfaces and between said seal element and said body structure;

a retainer element being at least partially positioned within said body and being positioned about said closure element, said retainer element defining an annular shoulder that engages said abutment surface of said seal element; and

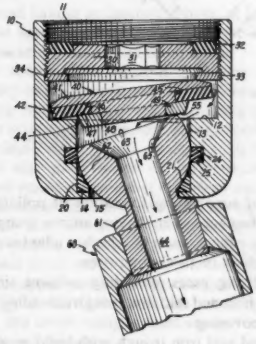
means securing said retainer element against said abutment surface of said seal element with sufficient force to induce radial yielding of said seal element and establish substantially full surface sealing engagement between said seat surface and sealing surface and establish sealing engagement between the outer portion of said seal element and said body structure.

4,356,998

SELF-CLOSING TAP VALVE

Eugen Bach, Durlacher Strasse 34, 7531 Keltern-Ellmendingen, and Jürgen A. Bach, Forlenweg, 7531 Keltern-Niebelsbach, both of Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 168,632
Int. Cl.³ F16K *31/00*; F16L *27/04*
U.S. Cl. 251—354 **21 Claims**



1. A self-closing dispensing valve for pressurized fluids comprising in combination:

a valve housing enclosing a pressure space with an inlet port and an outlet port, the inlet port being part of a connection to a source of pressurized fluid and the outlet port being surrounded by a valve seat on the upstream side of the outlet port;

a valve closing member arranged in the pressure space of the housing so as to face the valve seat, the valve closing member cooperating with the valve seat to normally close the outlet port under the effect of the pressurized fluid; and

an elongated hollow outlet member supported by the valve housing, the outlet member having an axial outlet bore in communication with the outlet port, at least when the valve is open; and wherein

the valve closing member has a generally plate-shaped outline, being liftable from the valve seat in a tilting motion of random tilt orientation;

the outlet member has on its upstream extremity an enlarged spherical head portion which cooperates with the valve housing to form a ball-and-socket connection giving universal pivotability to the outlet member;

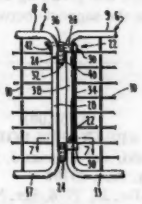
the outlet member further has on its upstream end an annular face in the form of a truncation on its spherical head portion arranged to cooperate with a contact face on the downstream side of the valve closing member, so that a randomly oriented pivoting movement of the outlet member away from a normal position in which said two faces are aligned causes the annular face of the outlet member to move against the contact face of the valve closing member, thereby tilting and laterally lifting the latter from the valve seat to open the valve.

4,356,999

PORTABLE FENCING

Peter F. McShane, "Woodspring" Bothwell, Tasmania 7411, Australia

Filed Jan. 2, 1979, Ser. No. 645
Int. Cl.³ E04H *17/16*
U.S. Cl. 256—26 **24 Claims**



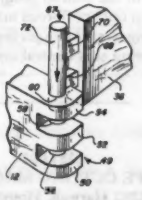
1. A fence unit including at least two generally uniformly planar fence sections swingably connected end to end by connecting means enabling said fence sections to be swung into a position in which they are juxtaposed in substantially parallel planes to allow said fence sections to be folded, one of said fence sections having a rod adjacent the connecting means extending beyond the plane of said sections for limiting the amount of relative swing between said fence sections and to prevent the at least two fence sections from being extended to be parallel to each other whereby when said fence sections are opened to the limit allowed by said rod, said fence sections form between them a V-shape such that the fence unit is self supporting when placed on the ground.

4,357,000

MOLDED PLASTIC FENCE SECTION

Cosmo N. Tisbo, and Thomas A. Tisbo, both of Barrington, Ill., assignors to Custom Plastics, Inc., Elk Grove Village, Ill.

Filed Oct. 31, 1980, Ser. No. 202,781
Int. Cl.³ E04H *17/14, 17/18*
U.S. Cl. 256—26 **12 Claims**



1. An ornamental integrally molded plastic fence section comprising: a pair of substantially parallel stringers, a plurality of pickets, each of said pickets being substantially perpendicu-

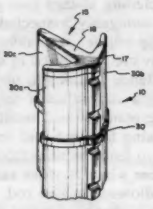
lar to the stringers and being formed integral with the stringers, a plurality of identical spaced ears formed integral with one end of each stringer, each of said ears have a rod aperture extending therethrough and being aligned with the rod aperture of each other ear of the plurality, selected ears having slots contained therein, each slot extending from the exterior of the respective ear to the respective rod aperture, each slot in each ear being aligned with each slot in each other ear in the respective plurality, a second plurality of supports formed integral with the other end of each of the stringers, each of said supports having a height less than the distance between adjacent ears in the first mentioned plurality, each of the supports having a width less than the width of the slot in the ears, and a cylindrical rod formed integral with the supports in a given plurality, each of said rods having a diameter slightly less than the diameter of each rod aperture for snugly fitting into aligned rod apertures in a given plurality of ears, whereby adjacent fence sections are readily locked to each other by inserting each rod of one section into rod apertures of a second section with the sections positioned in an attitude wherein the supports pass through the slots, and pivotting of the sections relative to each other positions the supports between adjacent ears.

4,357,001

METHOD AND APPARATUS FOR MAKING FENCES

Donald W. Schmanski, and Thomas J. Rose, both of P.O. Box 1298, Carson City, Nev. 89701

Filed Mar. 23, 1976, Ser. No. 669,506
Int. Cl.³ E04H *17/02, 17/24*
U.S. Cl. 256—51 **2 Claims**



1. A lightweight composite fence post comprising
an elongate central wire support means;
an elongate central flange having an edge connected to the central wire support means and projecting therefrom;
a pair of swept back flanges, each having an edge connected to the junction of the elongate central wire support means and the central flange, and an edge spaced from the central flange and each said swept back flange forming an acute angle with the central flange; and
a one piece central core of fibrous material in the central and swept back flanges, said flanges being formed of fiberglass and resin covering said central core.

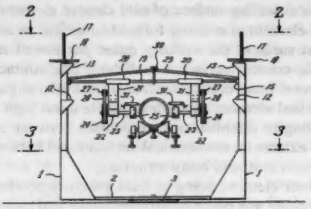
4,357,002

PIPE CUTTING MACHINE

Richard J. Steele, 2202 Harwell, Houston, Tex. 77026

Filed Aug. 13, 1981, Ser. No. 292,406
Int. Cl.³ B23K *7/04*
U.S. Cl. 266—56 **6 Claims**

1. In a pipe cutter a pivotal base member, a pair of vertical supporting members mounted on said base member, a block vertically movable in each of said supporting members, shafts extending from and anchored in said blocks, cylinders slidably



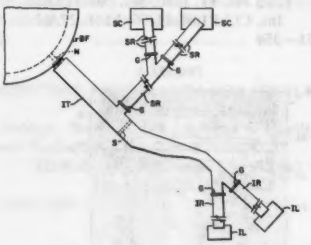
mounted on said shafts and supporting rotatable cutting torches, and means for rotating said torches.

4,357,003

BLAST FURNACE CAST HOUSE POLLUTANT SUPPRESSION

Stephen Vajda, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Sep. 24, 1980, Ser. No. 190,130
Int. Cl.³ C21B *7/12;* C21C *5/38;* B22D *39/00*
U.S. Cl. 266—158 **9 Claims**



1. A method of suppressing formation of pollutants in an ironmaking blast furnace system having an iron trough, an iron runner, and a slag runner, each of which is adapted to carry a molten stream, which method comprises:
occluding oxidizing gases, including ambient air, from at least said tap hole and said iron trough extending from said tap hole by covering
said tap hole and said iron trough with hood means having no ventilating means said hood means arranged in relation to said taphole and said iron trough in a manner capable of preventing ventilation of said hood means.

5. In a blast furnace system including a furnace having a tap hole, said system having an iron trough, an iron runner, and a slag runner, each of which is adapted to carry a molten stream, the improvement which comprises: hood cover means for at least said tap hole and said iron trough, said hood cover means containing no ventilating means and arranged in relation to said taphold and said iron trough in a manner capable of preventing ventilation of said hood cover means and occluding oxidizing gases from said tap hole and from said iron trough extending from said tap hole.

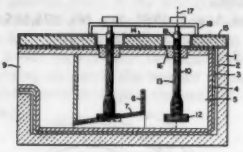
9. In a blast furnace system comprising clay gun latch support means and an iron trough, the improvement comprising:
transportable hood cover means for said iron trough, which hood cover means occludes oxidizing gases from therein and which includes a top portion tapering toward the blast furnace and terminating in a nose portion defining an end closure which accommodates positioning of said hood cover means beneath said clay gun latch support.

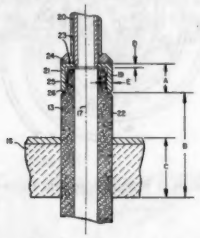
4,357,004

APPARATUS FOR REFINING MOLTEN METAL

John F. Pelton, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 6, 1981, Ser. No. 280,699
Int. Cl.³ C22B 9/00
U.S. Cl. 266—225 2 Claims





1. In an apparatus for refining molten metal comprising, in combination:

(a) a vessel having an insulated cover, at least one inlet zone and at least one outlet zone, and at least one refining compartment connected thereto; and

(b) one rotating gas distributing device disposed in each refining compartment, said device comprising (i) a shaft passing through the cover and having drive means at its upper end located above the cover outside of the compartment and a rotor fixedly attached to its lower end located below the cover inside of the compartment and (ii) a hollow stator surrounding said shaft and fixedly attached to said vessel, the stator and shaft having a common hypothetical axis, said stator having an upper portion and a lower portion, the upper portion comprised of corrosion resistant metal and the lower portion comprised of graphite, the upper portion being connected to the lower portion by a corrosion resistant metal/graphite threaded joint, the cover being at least about 5 inches thick in the vicinity of the stator,

the improvement comprising

(A) providing a joint which comprises a threaded male graphite piece having a shoulder preceding the threads and a threaded female corrosion resistant metal piece, the female piece being seated against the shoulder of the male piece and the cross-sectional area of the female piece, as measured immediately adjacent to the shoulder, being at least about 30 percent of the cross-sectional area of the unthreaded section of the graphite portion as measured immediately adjacent to the shoulder;

(B) providing an annular passage in the unthreaded section of the corrosion resistant metal portion through which a cooling gas can be passed, at least part of said passage being located perpendicular to the axis and proximate to the joint at a distance therefrom about equal to the thickness of the wall of the female piece in which the threads are cut and having an effective cooled area of at least about 70 percent of the cross-sectional area of the unthreaded section of the graphite portion as measured immediately adjacent to the shoulder;

(C) establishing a ratio of (i) the distance from the side of the cover adjacent to the refining compartment to the side of the joint closest to the cover to (ii) the thickness of the cover, said ratio being greater than unity; and

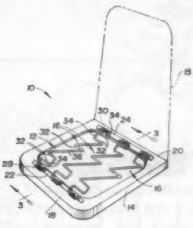
(D) establishing a ratio of (i) the distance from the surface of the annular passage closest to the shoulder to the shoulder to (ii) the distance from the side of the cover adjacent to the refining compartment to the side of the joint closest to the cover, said ratio being no greater than about 0.35:1.

4,357,005

SUPPORT FOR SEAT PAD

Robert P. Bourke, Kitchener, Canada, assignor to Lear Siegler, Inc., Livonia, Mich.

Filed Dec. 8, 1980, Ser. No. 214,062
Int. Cl.³ A47C 7/30
U.S. Cl. 267—144 5 Claims



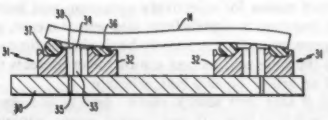
1. A support for a seat pad comprising: a plurality of metal torsion bar springs including torsion bars with opposite ends and including connecting portions extending between the ends of the torsion bars, each spring having a pair of end torsion bars adapted to be respectively connected to spaced portions of a seat frame such that the springs extend therebetween in a spaced relationship to each other in order to permit mounting of the seat pad on the frame, each spring also having at least one intermediate torsion bar located between the end torsion bars thereof, and two strips of adhesive tape one of which is folded to connect one set of end torsion bars of the springs and the other of which is folded to connect the other set of end torsion bars of the springs to provide a connection therebetween in order to facilitate storage, handling, and assembly of the support to the seat frame.

4,357,006

DISTORTION FREE 3 POINT VACUUM FIXTURE

Lawrence P. Hayes, Berlin, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,936
Int. Cl.³ B25B 11/00
U.S. Cl. 269—21 6 Claims



1. In a vacuum operating clamp for holding a workpiece in a fixed plane,

plural workholding members of a fixed length fixedly mounted on a base,

each of said workholding members having a concavity on its upper surface,

a flexible sealing member on each of said workholding members around said surface,

a ball in said concavity, and extending above the upper surface of said workholding member,

means adapted to support the upper edge of the sealing member above the upper surface of said ball, and

vacuum means passing through said workholding member through which a vacuum may be drawn between a workpiece overlying said flexible sealing member and said upper surface of said ball whereby said work is clamped onto and supported tangentially to said upper surface of said ball without distortion.

4,357,007

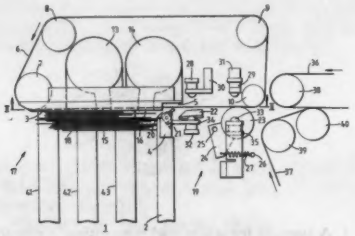
SINGLER DEVICE

Willy A. Mens Franciscus, Wommelgem, and Ludovicus Van Dorst, Kapellen, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 24, 1980, Ser. No. 143,383

Int. Cl.³ B65H *3/12, 7/12, 7/16*

U.S. Cl. 271—96 **7 Claims**



1. A singler device for flat articles having an input stage for storing a plurality of articles to be singulated and a delivery stage for accepting articles from said input stage and feeding singulated articles to an output, the device comprising:

a movable drive belt for carrying said articles from said input stage to said delivery stage;

first holding means in said input stage for holding an article on said moving drive belt when said first holding means is activated;

second holding means spaced downstream from said first holding means along the direction of travel of said drive belt for holding an article on said moving drive belt when said second holding means is activated;

first and second sensor means in said delivery stage for providing a signal upon detection of the presence or absence of an article on said belt, wherein said first sensor means is spaced upstream from said second sensor means along the direction of travel of said belt;

delivery means for feeding singulated articles that reach said second sensor means to an output;

separator means for inhibiting the transfer of more than one article at a time into said delivery stage from said input stage and for holding at said first sensor means all but one article that enters said delivery stage; and

control means for selectively operating said holding means in response to signals from said sensor means, saic control means operating in a cycle beginning at time=0, defined as the time said second sensor means detects the absence of an article on said belt, wherein:

(a) if said first sensor means detects the absence of an article at time=0, said control means activates said first holding means at time=T1 for delivery of at least one article into said delivery stage to said first sensor means to cause said control means to deactivate said first holding means and activate said second holding means for delivery of a singulated one of said at least one article to said second sensor means, or, if said first sensor means detects the presence of an article at time=0, said control means activates said second holding means at time=T2 for delivery to said second sensor means of said article at said first sensor means to singulate said article, and (b) said control means deactivates said second holding means when said second sensor means detects said singulated article.

4,357,008

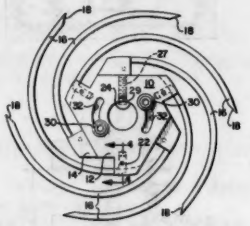
CREEL ASSEMBLY

Roscoe Campbell, Dayton, Ohio, assignor to Harris Corporation, Dayton, Ohio

Filed Aug. 1, 1980, Ser. No. 174,485

Int. Cl.³ B65H *29/40*

U.S. Cl. 271—315 **4 Claims**



1. A creel for use in a business forms delivery apparatus, comprising:

a pair of plates;

means for mounting said plates together for rotation about a common central axis of symmetry;

a plurality of generally spirally formed fingers mounted at one end thereof to each of said plates so that both plates hold an equal number of said fingers at equally angularly spaced intervals and extending spirally outward from said axis counter to the direction of rotation of said plates;

said mounting means including means for limiting rotation of said plates relative to one another about said axis between a position wherein said spirally formed fingers on one of said plates are in registry with those on the other of said plates and a position in which said spirally formed fingers on said one plate are disposed equidistant between said spirally formed fingers on said other plate, said mounting means further including means for releasably holding said plates in either one of said positions.

4,357,009

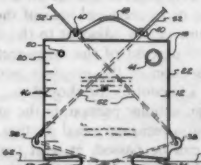
WATER-FILLED WEIGHT BAG

Phillip L. Baker, 3133 W. 15th, Topeka, Kans. 66604

Filed Jun. 18, 1980, Ser. No. 160,654

Int. Cl.³ A63B *21/12*

U.S. Cl. 272—96 **10 Claims**



1. A fluid-filled weight bag carried around the front of the lower leg and one foot of the user for therapeutic exercise comprising:

two layers of waterproof flexible material peripherally secured together, defining a first substantially rectangular

compartment with sides, a top and a bottom adapted to be wrapped around the lower leg; and

a second compartment of comparable width, means connecting the bottom of said first compartment to said second compartment for communicating the interiors of said compartments for fluid flow therebetween and providing a hinge portion to permit the second compartment to flex out of the general plane of the first compartment,

tie means secured to the sides of the first and second compartments for wrapping and securing said compartments about the lower leg and foot respectively; and

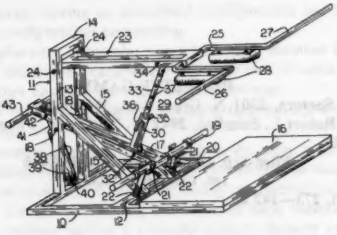
closeable opening means in the bag for filling and draining said compartments to adjust the weight carried in the exercise bag.

4,357,010

MULTIPURPOSE EXERCISING MACHINE

Jerome R. Telle, 460 Cody Dr., Golden, Colo. 80401

Filed Nov. 7, 1980, Ser. No. 204,881
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—117 **11 Claims**



1. An exercise equipment comprising an upright support, a first beam pivoted on said support about a horizontal axis, a second beam pivoted on said support on a horizontal axis below and parallel to the axis of said first beam and extending forwardly below said first beam, an adjustable connecting means pivoted at one end to said first beam remote from said support and pivoted at its other end to said second beam remote from said support, means for mounting weights on said second beam near its forward end whereby lifting of said first beam lifts said second beam and the weight thereon, a weight lifting bar and spaced shoulder pads mounted on said first beam at the outer free forward end thereof, said adjustable means varying the positions of said first beam relation to the second beam within a range of positions of a user from a low squat and lift position to a standing shoulder position, and an isokinetic means connected between said support and one of said beams for limiting the speed of movement of said beams to a predetermined rate.

4,357,011

ADAPTING STRUCTURE FOR EXERCISE MACHINES

Harvey C. Voris, Rancho Palos Verdes, Calif., assignor to Paramount Health Equipment Corporation, Los Angeles, Calif.

Filed Jun. 8, 1981, Ser. No. 271,486
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—118 **10 Claims**

1. Apparatus for aiding in performing squat and leg press exercises on exercise machines having press bars actuable substantially vertically and terminating at two sides thereof in substantially cylindrical horizontal gripping portions, comprising:

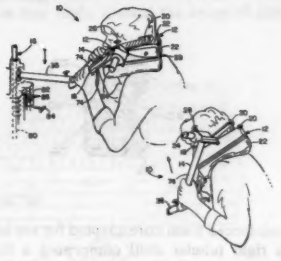
a pair of body engaging adaptors mounted on the respective gripping portions of said press bar, said adaptors being mirror images of each other, each said adaptor comprising:

tubular means for transmitting a user's force, said tubular means slidably receivable over a gripping portion of the press bar and rotatable thereon between first and second substantially opposite positions for two different exercises;

means for engaging the upper surface of a user's shoulder when in said first position of said tubular means; and

means for engaging the sole of a user's foot in said second position of said tubular means;

said shoulder engagement means and said foot engagement means being positioned essentially back to back and connected to said tubular means such that substantially upward forces may be applied to said shoulder engagement means during one exercise to said foot engagement means during a different exercise, said forces being directed substantially perpendicular to said tubular means;



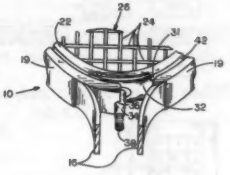
whereby substantially upward forces will be applied to the press bar of a weight machine through the shoulders or feet of a user when performing squat or leg press exercises, respectively.

4,357,012

GAME RACKET HAVING REMOVABLE STRINGED INSERT

Michael B. Maynard, 7040 S. Seven Oaks La., Canby, Oreg. 97013

Filed Apr. 30, 1981, Ser. No. 259,246
Int. Cl.³ A63B *51/00*
U.S. Cl. 273—73 L **12 Claims**



2. A sports racket, comprising:

(a) a handle;

(b) a unitary outer frame fixedly connected to said handle, said outer frame defining an interior opening and including a first channel extending along the interior side thereof, said first channel being open toward said interior opening;

(c) an inner frame no larger than said interior opening defining a striking zone surrounded thereby, said inner frame defining a second channel extending circumferentially along the exterior side thereof, said inner frame being located within said outer frame and being generally coplanar therewith; and

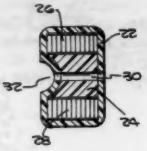
(d) an inflatable resiliently flexible tube extending around said inner frame, respective portions thereof being located within said first and second channels, said flexible tube supporting said inner frame removably in a predetermined location within said outer frame.

4,357,013

REINFORCED FOAM CORE COMPOSITE STRUCTURE AND METHOD

David Fernandez, 1457 Dara St., Camarillo, Calif. 93010, and Francis Van Dyck, 2 Rue de Verviers, Boite 43, 4020 Liege, Belgium

Filed Jul. 31, 1981, Ser. No. 289,038
Int. Cl.[3] A63B 49/10
U.S. Cl. 273—73 C 22 Claims



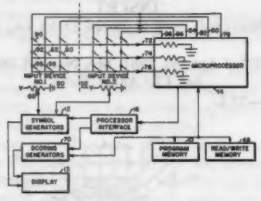
14. A reinforced foam core adapted for use in a tennis racket having a rigid tubular shell comprising a foam core sandwiched between parallel honeycomb reinforcing layers.

4,357,014

INTERACTIVE GAME AND CONTROL THEREFOR

Ralph H. Baer, Manchester; Leonard D. Cope, Merrimack; Oliver D. Holt, Amherst, all of N.H., and Howard J. Morrison, Deerfield, Ill., assignors to Sanders Associates, Inc., Nashua, N.H. and Marvin Glass & Associates, Chicago, Ill.

Continuation-in-part of Ser. No. 770,735, Feb. 22, 1977, abandoned. This application May 5, 1980, Ser. No. 146,832
Int. Cl.[3] A63F 9/22
U.S. Cl. 273—85 G 9 Claims



1. In a digital processor controlled interactive game system having means for generating and displaying one or more game symbols on a two dimensional graphic display, apparatus for determining the motion of the symbols on the display, comprising:

a processor;

an input device coupled to said processor, said input device including at least one physical actuable element for defining at least one game path segment from a number of different game path segments by manually preselecting a plurality of individual, successive, incremental directional movements of a symbol prior to execution of any of such movements, said element determining at least one specific motion command for the symbol; and

means for executing a selected plurality of successive, incremental directional movements of a symbol after preselection thereof.

9. A method for determining the motion of game symbols in a digital processor controlled interactive game system having means for generating and displaying one or more game symbols on a two dimensional graphic display, comprising the steps of:

generating signals representing at least one game symbol for display on a graphic display;

displaying said symbol;

manually preselecting a plurality of individual, successive, incremental directional movements for the symbol prior to execution of any of such movements on the display by manually operating at least one physically actuable element with defines at least one game path segment from a number of different possible game path segments; and

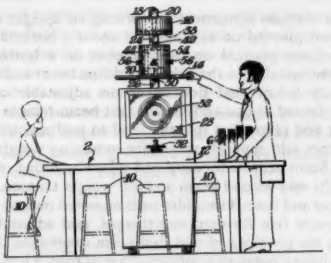
causing the symbol to move on the display in accordance with the preselected movements defining said at least one game path segment.

4,357,015

ROULETTE GAME

Frank Santora, 2301 N. Grant Ave., Wilmington, Del. 19806, and Robert L. Saissline, 3942 W. Northview, Phoenix, Ariz. 85021

Filed Sep. 19, 1980, Ser. No. 188,616
Int. Cl.[3] A63F 5/00
U.S. Cl. 273—142 E 5 Claims



1. Apparatus for viewing the ball in a game of roulette at the instant the ball drops into a numbered slot on the roulette wheel comprising:

(a) means mounting a television camera above a conventional roulette wheel, said camera being focused upon said wheel,

(b) means for rotating said camera about an axis extending substantially vertically through the center of said wheel and enabling rotation of said camera about said axis at substantially the same rotational speed as said wheel during play of the game, and maintaining focus of the camera on said wheel during play of the game, and

(c) means for transmitting the signals from said camera during rotation of camera and wheel to

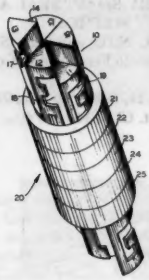
(d) at least one stationary television receiving monitor in view of the players of said game,

whereby when the roulette wheel is spun and play is begun, said camera rotating at substantially the same speed as said wheel causes a substantially still image of said wheel on said monitor, and the roulette ball appears on said monitor the instant that it drops into a numbered slot on said wheel.

4,357,016
MANIPULATION PUZZLE

Marvin H. Allison, 1336 Lexington Ave., Schenectady, N.Y. 12309

Filed Sep. 11, 1980, Ser. No. 186,176
Int. Cl.[3] A63F *9/08*
U.S. Cl. 273—156 17 Claims



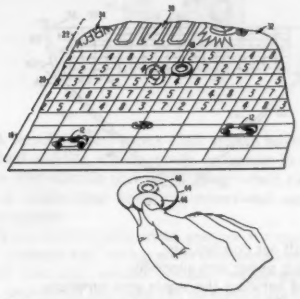
1. A puzzle having an assembled configuration and a disassembled configuration comprising:
- a first plurality of members in which each member is movable relative to each other member and in which each member has face having a pattern thereon;
- at least one other member having a face having a pattern thereon;
- said patterns comprising variations in the dimension of said members and other members perpendicular to said faces;
- said first plurality of members being configured to form a first surface comprising the faces of each member, said first surface having a variable pattern thereon which is varied by relative movement of said members of said first plurality;
- said at least one other member being configured to form a second surface comprising the faces of each said other member;
- said first surface and said second surface being in closely spaced mutually facing relation and said first plurality of members being maintained in assembled relationship with each other and with said at least one other member solely by the interaction of said surfaces, said variable pattern interacting with said pattern on said face of said at least one other member to define a solution path for said puzzle, said solution path comprising an ordered sequence of movement of said first plurality of members and said at least one other member.

4,357,017
AUTO RACING GAME WHEREIN A NUMBERED ARRAY AND PLAYER-ACTUATED DISCS DETERMINE RACE CAR MOVEMENT

Herman E. Schneider, 5493 Omar St., Fremont, Calif. 94538, and Daniel A. Stein, 4400 Central Ave., #114, Fremont, Calif. 94536

Filed Jul. 30, 1980, Ser. No. 173,462
Int. Cl.[3] A63F *3/00, 9/02*
U.S. Cl. 273—246 4 Claims

1. An auto racing game apparatus to be played by a plurality of drivers and including a playing board and a plurality of movable playing pieces, comprising;
- a rectangular playing surface on a rectangular board;
- a generally oval race track of multiple lanes disposed along the outer border of the rectangular playing surface;
- a preselected array of a large plurality of numbers disposed in selected orientation on the playing surface;
- a bonus area on the playing surface containing a number of relatively larger value than the largest number in the numbered array;
- areas of preselected penalties intermixed with the array of numbers on the playing surface and indicative of problems encountered by a driver in the course of a race, and including opposing pit stop and crash/wreck sections disposed adjacent and bordering the bonus area, wherein the numbered array is disposed between the race track and the penalty sections/bonus area;
- driver-actuated movement means including a launchable number selecting member defined by a small flat disc for launching in free flight toward the array of numbers on

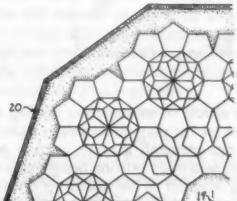


the playing surface by a respective driver, to coact with the array of numbers by determining a number in the array or a penalty in the penalty areas, to thus determine the extent of movement of the movable playing pieces;
- said driver-actuated movement means including a launching pad and launching flipper means, wherein the disc is placed on the pad and launched therefrom by pressure from the flipper means exerted by the driver; and
- wherein the areas of preselected penalties coact with the number selecting member to determine a penalty rather than a forward extent of movement when a disc erroneously lands on the penalty areas rather than on the array of numbers.

4,357,018
PENTAGONAL GAME EQUIPMENT

Murray B. Calvert, 745 Rowntree Ave., London, Ontario, Canada (N6C 2L9)

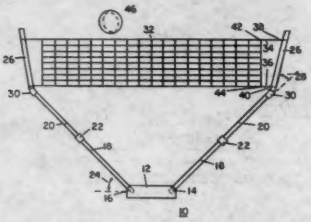
Filed Aug. 2, 1979, Ser. No. 63,053
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—261 6 Claims



1. A game comprising
- a playing surface marked with interlocking closed chains of regular pentagons in side to side abuttment, defining a unit length such that the side of each said pentagon is of said unit length, and
- a plurality of playing pieces playable on said surface,

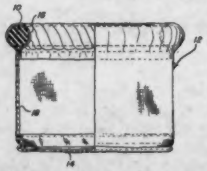
wherein said markings on said surface designate permitted playing positions for said playing pieces,
in which at least one of said chains is a self-intersecting chain comprised of six congruent regular pentagons, in which two opposite pentagons overlap to form a rhombus.

4,357,019
FLOATBALL APPARATUS
Howard L. Wouters, 3904 118th St. E., Tacoma, Wash. 98446
Filed Sep. 8, 1980, Ser. No. 185,164
Int. Cl.³ A63B *71/02, 61/02*
U.S. Cl. 273—411 **8 Claims**



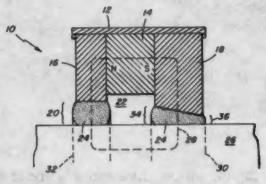
1. A floatball net comprising:
two opposing upper arm supports;
a net affixed between the upper arm supports;
a means for affixing the net to the upper arm supports;
two opposing lower rods;
two angled collars which individually attach the upper arm supports to the lower rods;
a weighted base with insertion holes at opposite ends of the base, each insertion hole capable of receiving a lower rod and affixing each of the lower rods at an identical angular displacement of between 30 and 50 degrees with respect to the horizontal plane of the base.

4,357,020
CONVERTIBLE RECREATIONAL DEVICE
Edward Van Bryant, Jr., Richmond, Va., assignor to M & B Headwear Co., Inc., Richmond, Va.
Filed Oct. 17, 1980, Ser. No. 197,847
Int. Cl.³ A63B *65/00;* **A63H** *33/18;* **A42B** *1/04;* **A45C** *9/00*
U.S. Cl. 273—424 **1 Claim**



1. A convertible article of manufacture serving the purpose of a recreational device for play, dress and as a carry-all, comprising a flexible rim element, a body portion permanently attached to said rim, said body portion being made of a flexible material and being adapted to be rolled up on and unrolled from said rim element, said rim element being generally circular in shape and forming a perimeter around a circle of a diameter to comfortably fit around the head of a person who uses the article, said body portion being an elongated substantially cylindrical wall with two ends, one of said ends being open and attached to said rim, the other end of said body being closed with generally flat circular member, said circular member having a diameter substantially equal to the diameter of said rim, said elongated substantially cylindrical wall of said body having a length equal to at least one-half the diameter of said rim whereby all of said substantially cylindrical wall can be rolled up on said rim to position said circular end member of the body adjacent said rim in a manner to span the entire circular area defined by the perimeter of said rim to form a circular disc-like whirling device.

4,357,021
FERROFLUID ROTARY-SHAFT SEAL APPARATUS AND METHOD
Kuldip Raj, Merrimack, N.H., and Alan Schwartzman, Cambridge, Mass., assignors to Ferrofluidics Corporation, Nashua, N.H.
Filed Nov. 19, 1980, Ser. No. 208,287
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—1 **20 Claims**

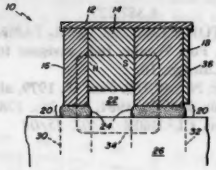


1. A ferrofluid, rotary-seal apparatus having an extended seal life, which seal apparatus comprises:
(a) an annular permanent magnet adapted to surround the rotary shaft to be sealed and having poles of opposite polarity at each end; and
(b) first and second, magnetically permeable, pole-piece elements in a magnetic-flux relationship with the one and the other ends, respectively, of the permanent magnet, each pole piece having a one end and another end and adapted to surround the rotary shaft to be sealed, the one end of each pole-piece element adapted to extend into a close, noncontacting relationship with the surface of the shaft to be sealed, to form a gap therebetween, the first pole piece having a flat end at the one end, and the second pole piece having a tapered end at the one end, the first and second pole pieces being unequal in width, with the second pole piece of greater width,
whereby ferrofluid disposed and retained in the first and second gaps, to form magnetic O-ring seals about the shaft, will evaporate preferentially, during rotation of the shaft, from the first gap at the flat end, to provide a seal apparatus of extended seal life, having a first air gap and a second single-stage, ferrofluid-sealing gap at the tapered end of the second pole piece.

4,357,022
FERROFLUID ROTARY-SHAFT SEAL APPARATUS AND METHOD
Kuldip Raj, Merrimack, N.H., assignor to Ferrofluidics Corporation, Nashua, N.H.
Filed Nov. 19, 1980, Ser. No. 208,288
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—1 **22 Claims**

1. A ferrofluid, rotary-seal apparatus having an extended seal life, which seal apparatus comprises:
(a) an annular permanent magnet adapted to surround the rotary shaft to be sealed and having poles of opposite polarity at each end; and
(b) first and second, magnetically permeable, pole-piece elements in a magnetic-flux relationship with the one and the other ends, respectively, of the permanent magnet, each pole piece having a one end and another end and adapted to surround the rotary shaft to be sealed and to form an air cavity therebetween, the one end of each

pole-piece element adapted to extend into a close, noncontacting relationship with the surface of the shaft to be sealed, to form a radial gap therebetween, the pole-piece elements unequal in width, to form a first gap which is smaller in width than the width of the second gap,



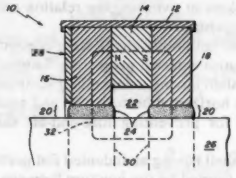
whereby a sealing amount of ferrofluid is disposed and retained in the first and second radial gaps, to form magnetic O-ring seals about the shaft, which ferrofluid will evaporate preferentially, during rotation of the shaft, from the first radial gap, to provide a seal apparatus of extended seal life, having a first air gap to the air cavity and a second ferrofluid-sealing radial gap.

4,357,023

FERROFLUID ROTARY-SHAFT SEAL APPARATUS AND METHOD

Akira Yamamura, Framingham, Mass., assignor to Ferrofluidics Corporation, Nashua, N.H.

Filed Nov. 19, 1980, Ser. No. 208,289
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—1 **16 Claims**



1. A ferrofluid rotary-seal apparatus having an extended seal life, the seal apparatus adapted to seal a rotatable shaft, which seal apparatus comprises:

(a) an annular permanent magnet adapted to surround the shaft which is to be sealed and having a one and another pole of opposite polarity;

(b) first and second, magnetically permeable, pole-piece elements, each having an outer diameter and an inner diameter, the outer diameter of each pole piece in a magnetic-flux relationship with the one and the other ends of the permanent magnet, to form an air cavity between the pole pieces, the pole pieces adapted to surround the shaft to be sealed, the inner diameter of each pole piece adapted to extend into a close, noncontacting relationship with the surface of the shaft to form a radial gap therebetween; and

(c) a housing to contain the magnet and the pole pieces, the housing including a nonmagnetic, heat-conductive material disposed in a close, heat-conducting relationship adjacent and extending along a substantial portion of the length of the first pole piece and toward the radial gap formed by the first pole piece,

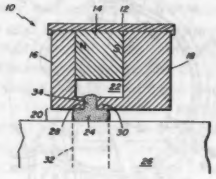
whereby heat, generated by the rotation of the shaft and in the ferrofluid magnetically retained in the radial gap at the end of the first pole piece, which forms an O-ring seal, is removed from the ferrofluid in the first gap by the heat-conductive material, to extend the seal life by reducing the temperature of the ferrofluid in the gap.

4,357,024

FERROFLUID ROTARY-SHAFT SEAL APPARATUS AND METHOD

Kuldip Raj, Merrimack, N.H., assignor to Ferrofluidics Corporation, Nashua, N.H.

Filed Nov. 19, 1980, Ser. No. 208,290
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—1 **18 Claims**



1. A ferrofluid-seal rotary-shaft system having an extended ferrofluid-seal life, which system comprises in combination:

(a) a magnetically permeable, rotary-shaft element; and

(b) a single-stage ferrofluid rotary-seal apparatus which comprises

(i) an annular permanent magnet surrounding the shaft element and having poles of opposite polarity,

(ii) first and second annular, magnetically permeable, pole-piece elements, the pole-piece elements at the one end in a magnetic fluid relationship with the permanent magnet, to form a closed, magnetic flux loop between the permanent magnet, the pole pieces and the shaft element, with the other end of the first and second pole pieces extending into a close, annular, noncontacting relationship with the shaft element, to form a radial gap between the other end of the first and second pole-piece elements and the surface of the shaft element,

(iii) the first and second pole pieces further characterized by a generally L-shaped, sectional configuration, with a projection from the other end of the first and second pole pieces, the projection of the first and second pole pieces extending toward each other, to form an interstage gap therebetween,

(iv) the first and second pole pieces further defining a ring-like air cavity between the first and second L-shaped pole pieces, the ring-like air cavity extending about the shaft element, and

(v) a defined quantity of ferrofluid disposed and retained by magnetic flux both in the interstage gap and the adjacent radial gaps at the other end of the pole pieces, to form a single-stage, O-ring ferrofluidic seal about the shaft element, with the cavity substantially free of excess ferrofluid, whereby during operation the seal apparatus will operate sequentially as a single-stage seal, a two-O-ring seal under each radial gap, and a single-stage seal under one radial gap before seal failure,

thereby providing a ferrofluid-seal-shaft system having an extended ferrofluid-seal life.

4,357,025

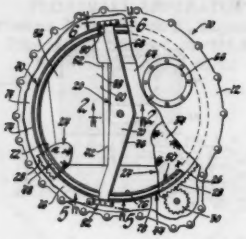
REGENERATOR SEAL DESIGN

Francis H. Eckart, Bargersville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 9, 1980, Ser. No. 157,688
Int. Cl.³ F16J *15/34*; F28D *19/00*
U.S. Cl. 277—26 **5 Claims**

1. In a regenerator seal assembly having rim segment with a platform including inner and outer edges thereon subjected to a thermal gradient radially thereacross and wherein the platform includes a face seal element thereon located in flat sealed relationship with a face of a rotary matrix regenerator disc and wherein the thermal gradient across the platform tends to cause it to twist as an inner hotter running edge of the platform

is forced closer to the rotary matrix disc and a cooler operating edge is thereby moved outwardly of the disc face so as to move the seal element from a desired flat sealed relationship with the rotary sealed matrix, the improvement comprising: an outwardly directed tab on each opposite end of the rim segment platform, a cross arm seal having a platform thereon, means for clamping the end tabs of said rim segment with respect to said



cross arm seal platform to elastically elongate the inner edge of the rim segment platform while elastically compressing the outside edge of the rim segment platform thereby to compensate for twisting or coning of the rim segment platform between the hot inner edge and the cooler outside edge thereof because of thermal gradients produced thereacross so as to tend to maintain the seal face in a flat sealed relationship with the rotating matrix disc.

4,357,026

RADIAL GASKET WITH PROTRUDING LIP PORTION

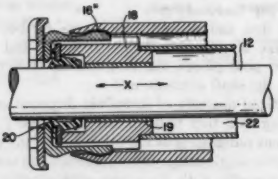
Benito Panchetti, Turin, Italy, assignor to POLIMAC S.A.S. di Pelissero-Panchetti & C., Italy

Filed Oct. 16, 1980, Ser. No. 197,628

Claims priority, application Italy, Sep. 25, 1979, 25963 A/79

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—153 **7 Claims**



1. A radial gasket for use in connection with a shaft adapted for axial movement within a cylinder containing a fluid under pressure therein and having a front face substantially perpendicular to said shaft and through which said shaft projects, said gasket adapted to be mounted in a working configuration at the intersection of said shaft with said front face of said cylinder, and comprising a rigid, annular support ring and a shaped body of flexible sealing material carried by said rigid support ring, said shaped body of flexible sealing material having a gasket axis parallel to the axis of said shaft and including a first surface for dynamic contact with said shaft and a second surface for static contact with said front face of said cylinder, said first surface of said shaped body of flexible sealing material including a protruding lip portion extending in a direction generally away from said front face of said cylinder so as to be subjected to said fluid under pressure within said cylinder, said protruding lip portion including an end face, said shaped body of flexible sealing material having a normal configuration prior to being mounted in said working configuration such that the angle between said end face of said protruding lip portion and said gasket axis is less than 90° and whereby upon being mounted in said working configuration said protruding lip portion of said shaped body of flexible sealing material is caused to rotate about an articulation line so that the angle between said end face of said protruding lip portion and said gasket axis becomes substantially equal to 90°.

4,357,027

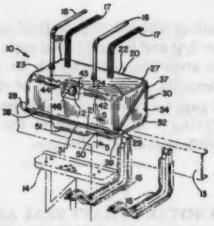
MOTOR VEHICLE FUEL TANK

Ronald A. Zeitlow, Fort Wayne, Ind., assignor to International Harvester Co., Chicago, Ill.

Continuation of Ser. No. 49,718, Jun. 18, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,412

Int. Cl.³ B60K *15/02, 15/04*

U.S. Cl. 280—5 A **6 Claims**



1. In a motor truck having a longitudinally extending side frame member supporting a motor truck cab, a pair of longitudinally spaced apart fuel tank support arm brackets mounted to the frame member and extending laterally outwardly therefrom below the cab, and a liquid fuel tank mounted to the support arm brackets in overhanging relation with the frame member, and comprising:

upper and lower tank body shells seam connected together along continuous external projecting flanges;

the lower tank shell having a depending sump portion means extruded in a horizontal bottom wall and nesting between the brackets for preventing fore-and-aft shifting of the tank;

the upper tank shell having an indented flat portion notching an outboard edge formed by the juncture between a horizontal top wall and an outboard vertical side wall and extending into said top and outboard side walls and forming two opposed shoulders of an alcove;

a fuel filler neck extruded in the flat portion between the shoulders and forming an opening to the tank;

a cap locking cam formed on the extruded end of the tube; and

a cap mounted over the extruded end of the neck and detachably secured thereto by the cam and shieldably recessed in the alcove.

4,357,028

ROLLER SKATE WITH IMPROVED SOLE PLATE

Even Hsieh, Taipei, Taiwan, assignor to Chicago Roller Skate Company, Chicago, Ill.

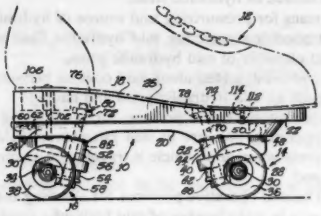
Filed May 21, 1980, Ser. No. 152,123

Int. Cl.³ A63C *17/02*

U.S. Cl. 280—11.28 **7 Claims**

1. A sole plate for a roller skate of the type including a truck assembly secured to the sole plate by a threaded fastener assembly, said sole plate comprising a unitary structure formed of plastic and having an upper surface and a bottom surface, said upper surface being adapted to be secured to a shoe structure, and including a heel portion, a toe portion, and an instep portion smoothly joining said toe portion with said heel portion, said heel portion being raised with respect to said toe portion so as to form a heel in said sole plate for the shoe structure, said instep portion and said heel portion being hol-

lowed out to define a bottom wall, said instep portion including at least one longitudinal support rib and a plurality of transverse support ribs, and said heel portion including a centrally disposed support rib extending from the sole plate heel end towards said instep portion, said ribs extending from said bottom wall toward said sole plate upper surface, a pair of columns disposed on opposite sides of said heel portion support rib and extending from said bottom wall toward said upper surface within said heel portion, each of said columns including a through bore extending downwardly to said sole plate bottom surface to accommodate securing means for securing the shoe structure to said sole plate in said heel portion, an aperture in said heel portion for receiving a portion of the threaded fastener assembly therethrough, and a recess extending from said bottom wall towards said bottom surface, said recess communicating with said aperture and being dimensioned for receiving and confining an end portion of the threaded fastener assembly therein to restrain said end portion against rotation.

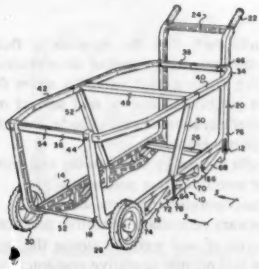


4,357,029

UTILITY CART

Louis G. Marini, and Thomas O. Marini, both of P.O. Box 6, Blackwood, N.J. 08012

Filed Aug. 13, 1980, Ser. No. 177,579
Int. Cl.³ B62B *1/22*
U.S. Cl. 280—47.19 **1 Claim**



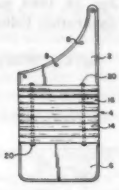
1. A utility cart particularly adapted for transporting trash cans comprising; a pair of molded plastic spaced apart and substantially U-shaped side frame members, each of said side frame members being comprised of two portions which are joined together by connecting means, said connecting means including an outwardly facing surface on one of said portions having a raised elongated tongue element thereon and an inwardly facing surface on the other of said portion overlapping said outwardly facing surface and including an elongated recessed groove element therein complimentary to said tongue element, said tongue element fitting within said groove element, and means for maintaining said tongue element within said groove element, each of said frame members having a longitudinally and horizontally extending lower member and a pair of upwardly extending legs, each lower member including a longitudinally and horizontally extending bar having a strut member extending vertically downwardly therefrom and a pair of diagonal bars extending from the end of said strut member to said horizontally extending bar, the upper end of the rear leg of each of said side frame members being curved rearwardly to form a pair of handles, a first molded plastic crossbar extending horizontally between said frame members adjacent said handles, a second molded plastic crossbar extending horizontally between said frame members adjacent the rear of said lower member, said second crossbar securing said frame members together and being adapted to support a trash can thereon, a horizontally disposed axle extending between said frame members adjacent the forward end of said lower member, said axle carrying a wheel at each end thereof and being adapted to support a trash can thereon, a substantially rectangularly shaped molded plastic upper frame member, said upper frame member being substantially horizontally disposed and being connected to the upper ends of each of said legs.

4,357,030

SPLASHGUARD FOR VEHICLES

Cyril A. Verge, 6519 Roslyn Rd., Halifax, N.S., Canada

Filed Jul. 9, 1980, Ser. No. 167,011
Claims priority, application Canada, Oct. 18, 1979, 337878
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—154.5 R **9 Claims**



1. A mud- and splashguard for vehicles comprising a top section having provision for securement to a vehicle, the top section having a straight lower edge surface,

and at least one elongate hinge member in parallel contact with the lower edge surface,

and at least two individual elastically extensible helical springs passing transversely through the elongate hinge member and through the lower edge surface of the top section and holding the elongate hinge member in parallel contacting relationship with the lower edge surface, upper and lower ends of the individual elastically extensible members being independently secured to the top section and to the hinge member respectively, by bolts passing through holes provided therein which are threadedly received within ends of the helical springs, the helical springs enabling relative movement between the hinge member and the top section.

4,357,031

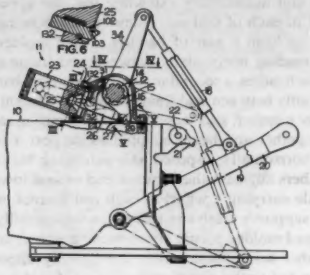
TOP MOUNTED LIFT RAM FOR TRACTOR

David A. Berg, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 3, 1980, Ser. No. 193,608
Int. Cl.³ A01B *63/111*; B60D *1/14*
U.S. Cl. 280—461 A **9 Claims**

1. A top mounted lift ram assembly for a three-point hitch on a tractor comprising, a rockshaft support casing adapted for removably mounting on a rear drive housing, a rockshaft pivotally mounted in said support casing, an actuator arm and lift arms carried on said rockshaft adapted for raising and lowering the three-point hitch, a hydraulic lift ram removably mounted externally on said support casing, a push rod means

operatively positioned between said hydraulic lift ram and said actuator arm for pivoting said rockshaft thereby providing a



removable assembly of said hydraulic ram and said rockshaft for mounting on said rear drive housing.

4,357,032

VEHICLE SUSPENSIONS

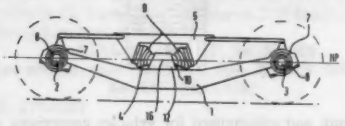
Dennis Kenyon, Evington, England, assignor to Dunlop Limited, London, England

Filed Jun. 25, 1980, Ser. No. 162,917

Claims priority, application United Kingdom, Jun. 26, 1979, 7922270

Int. Cl.³ B60G *19/02*

U.S. Cl. 280—681 **11 Claims**



1. A tandem axle vehicle suspension comprising a beam extending between and pivotally connected at each of its ends to a respective one of a pair of axles, spring means acting between a central portion of said beam and a vehicle mounting, said spring means comprising a pair of springs the axes of which are inclined at equal and opposite angles to the vertical, each spring being rigidly mounted to an inclined surface on the central portion of said beam and to said vehicle mounting so that pivotal movement of the beam in relation to the vehicle takes place in the spring itself, each said spring comprising layers of elastomeric material interleaved with and bonded to reinforcing elements of which at least some of said elastomeric layers and elements of each spring are curved about a common centre of curvature and the elastomeric layers and elements of each spring lie in planes extending substantially parallel to said axles.

4,357,033

INERTIA ACTUATED ANTIDIVE SYSTEM FOR VEHICLE

Bert Lee, Salt Lake City, Utah, assignor to Metron Logging, Inc., Edmond, Okla.

Filed Jun. 2, 1980, Ser. No. 155,416

Int. Cl.³ B60G *17/04*

U.S. Cl. 280—703 **2 Claims**

1. A system for preventing the forward portion of a vehicle from downwardly pitching toward the road during deceleration of the vehicle, said vehicle including

a frame,

a primary mover for said vehicle mounted on said frame, and

a suspension system mounfted on said frame for carrying a plurality of ground engaging wheels and for maintaining said frame in a generally level attitude during normal driving conditions,

said system generally maintaining said frame in said normal level attitude during deceleration of said vehicle and comprising

(a) at least one hydraulic press adapted to interconnect the forward portion of said frame and said suspension system and having at least one chamber containing a pressurized fluid,

(b) a source of hydraulic fluid,

(c) means for pressurizing said source of hydraulic fluid,

(d) a conduit connecting said hydraulic fluid source with said chamber of said hydraulic press,

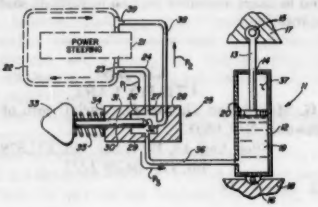
(e) a valve integrated along said conduit between said fluid source an said hydraulic press and having

(i) a first operative position for maintaining a minimal operating pressure in said chamber of said hydraulic press when said vehicle is traveling at a constant speed, and

(ii) second operative positions for allowing the fluid pressure in said chamber of said hydraulic press to increase on deceleration of said vehicle, said increase in fluid pressure

expanding said press to upwardly displace said forward portion of said frame with respect to said suspension system, and

being in proportion to the rate of deceleration of said



vehicle such that the increase in fluid pressure is greater for greater rates of deceleration,

(f) means for causing said valve to move from said first operative position to one of said second operative positions on deceleration of said vehicle, including,

(i) a support member,

(ii) a weight carried by said member and movable between at least two operative positions,

a normal operative position, and

a temporary secondary operative position,

the inertia of said weight causing the weight to move from said normal operative position to said secondary operative position upon deceleration of said vehicle,

(iii) resilient means for maintaining said weight in said normal operative position during travel of said vehicle at a constant speed and for returning said weight to said normal operative position after deceleration of said vehicle, and

(iv) means for causing said valve to move from said first operative position to one of said second operative positions in proportionate response to the inertial movement of said weight from said normal operative position to said temporary secondary operative position, such that

greater rates of deceleration of said vehicle cause

the inertia of said weight to produce a greater displacement force, and

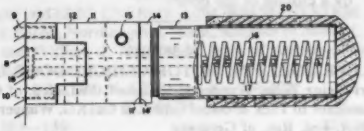
allow a greater increase in fluid pressure in said chamber of said hydraulic valve.

4,357,034

SAFETY BAR FOR FIRE TRUCKS

John McLoughlin, 92 Mobrey La., Smithtown, N.Y. 11787, and Neocles Athanasiades, Setauket, N.Y., assignors to John McLoughlin, Smithtown, N.Y.

Continuation-in-part of Ser. No. 10,178, Feb. 7, 1979, Pat. No. 4,273,360. This application Sep. 5, 1980, Ser. No. 184,352
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—751 2 Claims



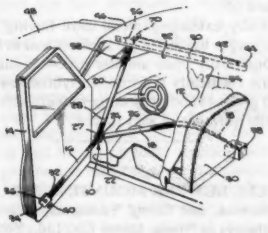
1. Safety bar comprising:
a base member adapted to be mounted on a permanent frame,
a connecting member pivotally mounted on the base member for rotation in a first plane,
a bar pivotally mounted on the connecting member for rotation in a second plane perpendicular to the first plane,
the connecting member being rotatable in one direction from a stop position against the base member and the bar can only rotate at one direction from a stop position against the connecting member,
the safety bar having a spring connected to hold the bar and connecting member in stop position.

4,357,035

FLEXIBLE BELT POSITIONING ARM

Nazareth Stamboulian, Los Angeles, Calif., assignor to American Safety Equipment Corporation, San Fernando, Calif.

Filed Aug. 29, 1980, Ser. No. 182,645
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 13 Claims



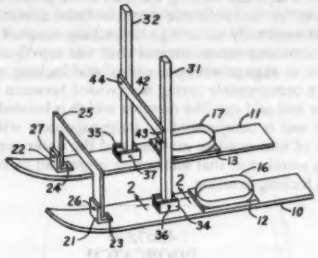
1. A flexible belt positioning arm adapted for use in a three point passive belt restraint system having two lower seat belt segments and an upper shoulder belt segment, the belt segments being movable between occupant restraint and non-restraint positions, the flexible belt positioning arm being adapted for positioning said upper shoulder belt segment about an occupant in a vehicle, the flexible belt positioning arm comprising:
a flexible tube arm wherein said tube arm includes an upper tube arm and a lower tube arm and a flexible connection means for flexibly connecting said upper tube arm to said lower tube arm;
a lower web guide or positioner associated with said tube arm for guiding and positioning said shoulder belt segment passed therethrough; and
means for mounting said flexible tube arm to said vehicle to place said lower web guide where it will position said shoulder belt segment adjacent the vehicle passengers shoulder when said restraint system is in the passenger restraint position.

4,357,036

SKI MANEUVERING APPARATUS

John Zepkowski, R.D. 2, Canton, Pa. 17724

Filed Sep. 8, 1980, Ser. No. 184,758
Int. Cl.³ A63C *11/00*
U.S. Cl. 280—809 6 Claims



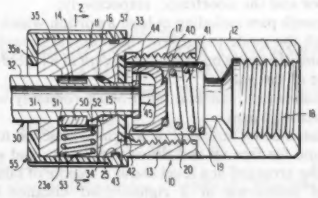
1. An apparatus for use with a pair of skis, the combination comprising
brace means connected between the front ends of said skis for maintaining a given distance between the connected points while permitting the rear portions of said skis to assume positions whereby the distance therebetween is equal to, greater than or less than said given distance and also permitting said skis to pivot about their longitudinal axes,
means of each of said skis for retaining a foot of one skiing thereon,
two vertical poles, each having a ski attachment end and a gripping end, the ski attachment end of each pole being attached to a respective one of said skis at a point between said means for retaining and the point of attachment of said brace means, and
a linkage rod, each end of which is pivotally connected to one of said vertical poles, so that the rear portions of said skis become separated when said gripping ends of said two vertical poles are moved toward each other.

4,357,037

HOSE COUPLING

Hans Oetiker, Oberdorfstrasse 21, CH-8810 Horgen, Switzerland

Filed Jan. 28, 1981, Ser. No. 229,065
Int. Cl.³ F16L *37/10*
U.S. Cl. 285—314 26 Claims



1. A locking arrangement for a coupling in which a male coupling member provided with an external annular groove is adapted to be inserted into a bore of a female coupling member whose bore is in direct communication with the outer surface of the female coupling member by way of a cutout whose

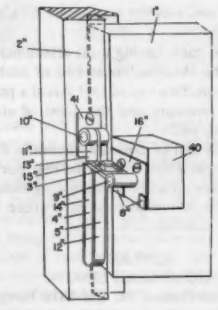
imaginary chord-like inner end intersects said bore, and which includes locking means for holding the male coupling member in its connected position relative to the female member with said cutout in substantial axial alignment with said external annular groove and normally operable to effect a locking action by extending through said cutout into said annular groove, and rotatable means on said female coupling member operable to engage with said locking means for withdrawing said locking means from said external annular groove to enable disengagement of said male coupling member from said female coupling member, characterized in that said locking means includes a separate locking member loosely inserted into said cutout, in that said rotatable means includes a rotatable cap-like member externally covering said locking member and cut-out and an actuating means integral with said cap-like member and operable to engage with one end of said locking member, and in that a compressible spring is provided between said locking member and said cap-like member which is located within said cut-out and is compressed by its engagement with the inner surface of said cap-like member and the outer surface of said locking member so that said spring urges said locking member into its locking position.

4,357,038

DOORCATCH

Allan G. Westerlund, Norrbackagaton 30, S-11341 Stockholm, Sweden

Continuation-in-part of Ser. No. 918,417, Jun. 23, 1978, Pat. No. 4,227,727. This application Jun. 24, 1980, Ser. No. 162,497
Claims priority, application Sweden, Jun. 23, 1977, 7707320
The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.
Int. Cl.³ E05C *17/24*
U.S. Cl. 292—270 **4 Claims**



1. A catch for use between a door and a doorframe comprising:

a catch part operatively cooperating with a guide on a latch, said catch part and latch being rotatably attached to the door and the doorframe, respectively;

said catch part including at least a portion which cooperates with the guide to prevent the removal of said catch part from said guide on said latch except at a recess in the inner end of the guide;

said catch part and said latch being rotatably mounted on horizontal axes;

said latch being mounted on a spindle attached to said doorframe for free up and down movement, and said spindle being arranged at a level above a spindle of said catch part and positioned at a right-angled distance between a mounting plate of said catch part and a central plane through the latch perpendicular to its horizontal axis when the door is closed, such that the portion of said catch part which cooperates with the guide of the latch automatically enters the recess when the door is closed, and cooperates with the guide to force the catch to a locked position automatically, whenever the door is closed either from inside or from outside the opening; and

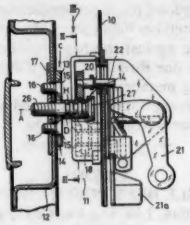
said recess of said guide of the latch including both a port for the catch part on one side of the upper part of the latch and with an opening for the catch part on the opposite side of the upper part of the latch, the opening being arranged to lie nearly straight below the port, when the latch is rotated to a substantially horizontal position, through which the catch part is automatically detachable from the latch at the opening of the door from outside by pushing up on the latch on the spindle of the catch part, followed by a closing of the door.

4,357,039

LOCK BOLT FOR MOTOR-VEHICLE DOOR LATCH

Karl-Heinz Tölle, Wuppertal-Ronsdorf, Fed. Rep. of Germany, assignor to Tack & Gabel GmbH & Co. KG, Wuppertal-Ronsdorf, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 185,885
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2936997
Int. Cl.³ E05B *15/02*
U.S. Cl. 292—341.12 **10 Claims**



1. In a motor-vehicle door lock wherein a lock bolt defining an axis and normally secured to the doorpost is engaged by a locking element normally secured to the door edge to retain the door against the doorpost, the improvement wherein said bolt is formed of:

a rigid axially extending metal core having a plurality of annular ridges having outer surfaces and defining a plurality of outwardly open annular grooves, and

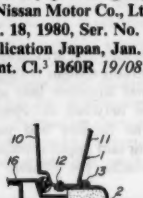
at least one elastically deformable synthetic-resin body filling said grooves and projecting radially therefrom beyond said outer surfaces of said ridges.

4,357,040

VEHICLE BUMPER MOUNTING STRUCTURE

Hirotaka Tomioka, and Shyuji Yamagata, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 18, 1980, Ser. No. 113,241
Claims priority, application Japan, Jan. 29, 1979, 54-8180
Int. Cl.³ B60R *19/08*
U.S. Cl. 293—102 **12 Claims**



1. A shock absorbing vehicle bumper mounting structure for a vehicle with an openable rear lid, comprising a bumper covering and a shock absorbing member at least partially

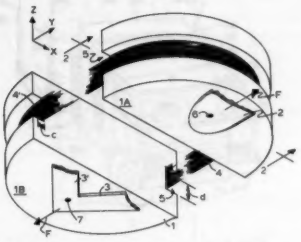
enclosed by said bumper covering, a cross member mounted to the vehicle below the rear lid, said shock absorbing member being secured to a lower end of the rear lid by said covering in such a manner that a front surface of said shock absorbing member faces a rear surface of said cross member, whereby shock from a collision is substantially and directly transmitted to the vehicle through said shock absorbing member and said cross member.

4,357,041

ELASTOMERIC ENERGY ABSORBING SYSTEM

Richard J. Farris, Northampton, Mass., assignor to James C. W. Chien and William J. MacKnight, both of Amherst, Mass., part interest to each

Filed Jun. 6, 1980, Ser. No. 156,923
Int. Cl.³ B61F *19/04*
U.S. Cl. 293—136 **35 Claims**



1. An energy absorbing device that comprises two rigid abutting mechanical members that are free to move into facing physical contact with one another and away from such facing physical contact, allowable relative motion between the two mechanical members being longitudinal movement away from and toward each other and substantial transverse motion with resepct to each other;

a plurality of elastomeric fibers disposed in pre-tension to interconnect the two mechanical members to maintain said physical contact and to apply a contact pressure between said mechanical members, the tension forces applied by the elastomeric fibers being of sufficient magnitude to maintain relatively high enough facing contact pressure between the two mechanical members that they act as a rigid piece with respect to moments and forces that below predetermined thresholds tend to separate them from said facing physical contact, said elastomeric fibers in pre-tension being the sole mechanism to maintain the two mechanical members in said facing physical contact with one another and to return the two mechanical members to said facing physical contact when that relationship is changed by both longitudinally-directed forces and laterally-directed forces; and

means to transmit both longitudinal and transverse impact forces that tend to separate the two mechanical members from said facing physical contact with each other, thus stretching the elastomeric fibers which serve, when stretched, to convert the impact energy into heat and stored elastic energy within the fibers to absorb impact energy.

4,357,042

BAIL

John C. Gall, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Sep. 19, 1980, Ser. No. 188,648
Int. Cl.³ A47J *45/07*; B65D *25/28*
U.S. Cl. 294—31.2 **12 Claims**

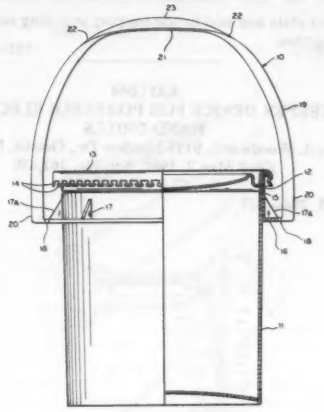
1. A one-piece bail for a container having an annular shoulder, comprising:

a sleeve adapted to be pulled onto the container to abut the shoulder thereof, and to be frictionally retained in abutting relationship with the shoulder of the container,

first reinforcing means integral with said sleeve for diametrically reinforcing said sleeve entirely about the perimeter thereof,

second reinforcing means operable with said sleeve and said first reinforcing means for retaining the disposition between said sleeve and said first reinforcing means entirely about the perimeter thereof,

tab means integral with and extending from approximately diametrically opposed portions of said first reinforcing means for providing areas of attachment adjacent to and extending from said first reinforcing means at said approximately diametrically opposed portions, and



a bail portion integral with said tab means and normally being disposed substantially concentrically with respect to said first reinforcing means, said bail portion being pivotable with respect to said tab means and said first reinforcing means into a container carrying position,

said first reinforcing means extending substantially outwardly from said sleeve so as to extend said areas of attachment of said tab means beyond the shoulder of the container, said second reinforcing means extending from a point on said sleeve spaced from said first reinforcing means to a point on said first reinforcing means spaced from said sleeve.

4,357,043

COMBINED BRUSH AND CUTTER ATTACHMENT FOR A SHOVEL BLADE

Marvin S. Towsend, 1365 Potomac Heights Dr., Oxon Hill, Md. 20022

Filed Dec. 18, 1980, Ser. No. 217,696
Int. Cl.³ A01B *1/20*
U.S. Cl. 294—59 **10 Claims**

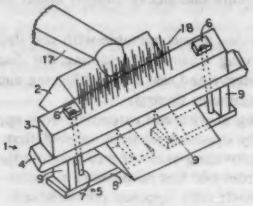
1. For a shovel blade having a handle, an attachment, comprising:

a brush having a bristle support and bristles attached thereon, said bristles extending perpendicularly to said bristle support;

at least one cutting plate means having a cutting edge, said plate attached below said bristle support; and

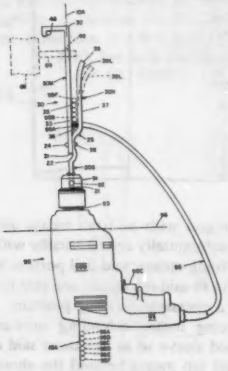
means for rigidly attaching both said plate and said bristle

support to the shovel blade, said attaching means being at least two spaced bolts extending through holes through



said plate and said bristle support attaching said elements together.

4,357,044
KEEPER DEVICE FOR PORTABLE ELECTRIC HAND-DRILLS
Clinton A. Woodworth, 9115 Meadow Dr., Omaha, Nebr. 68114
Filed May 7, 1981, Ser. No. 261,659
Int. Cl.³ A45C *11/24*
U.S. Cl. 294—137 **11 Claims**



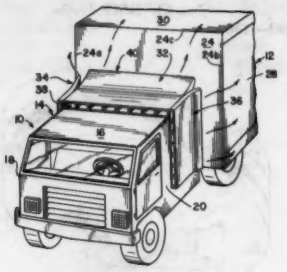
1. A keeper for carrying and suspendably storing a portable hand-drill of the general type including a housing, an adjustably tightenable chuck, and an elongate flexible electrical cord, said keeper extending uprightly along a longitudinal-axis and comprising:

A. a shank extending uprightly along said longitudinal-axis and having a top-end and a bottom-end providing the keeper lower terminus, said shank bottom-end being insertable into and removably secureable to a hand-drill chuck, whereby the hand-drill housing is positionable wholly remotely below said keeper;

B. an upright cord rack extending longitudinally rigidly uprightly from the shank top-end, said rack including a longitudinally extending upright backing part having a laterally extending finite-width between upright-edges for the backing, said backing including a longitudinally and laterally extending inner-side adapted to support transversely thereagainst convolutions of said flexible electric cord wherein the respective convolutions have a geometric center located below the shaft bottom-end, said rack also including a longitudinally extending upright finger part having a lateral-extent lesser than the backing finite-width and having an upper free-end, said upright finger lower portion being attached to the backing and said finger being resiliently urged toward the backing inner-side so as to maintain cord convolutions normally against the backing part of the cord rack; and

C. suspendable handle means attached to the cord rack backing part and located loftily above the keeper shank.

4,357,045
METHOD AND APPARATUS FOR REDUCING AIR DRAG ON TRUCK TYPE WHEELED VEHICLES
Harold G. Kinford, Jr., 3459 Ensign Cove, Aurora Shores, Ohio 44202
Continuation of Ser. No. 957,651, Nov. 3, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,561
Int. Cl.³ B62D *35/00*
U.S. Cl. 296—1 S **14 Claims**

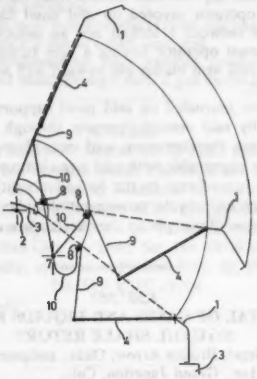


1. An air screen producing device mountable on a draft vehicle adapted to tow a trailer vehicle therebehind in a forward direction of movement of said draft and trailer vehicles relative to ground, said draft vehicle having an upright rear wall and said trailer vehicle having an upright front wall spaced rearwardly from said rear wall to provide an open space therebetween, said air screen producing device including tubular air passageway means on said draft vehicle and having front and rear ends with respect to said forward direction, said air passageway means including an air inlet opening at said front end and an air outlet opening at said rear end and adjacent said rear wall of said draft vehicle, said air outlet opening being an elongate narrow opening having major and minor dimensions, said tubular passageway means including air pressurizing means between said inlet and outlet openings for pressurizing ambient air entering said inlet opening during movement of said draft and trailer vehicles in said forward direction at a given velocity relative to ground, said pressurizing means providing for said pressurized air to be discharged from said elongate narrow outlet opening as a screen of air having a velocity higher than the velocity of ambient air relative to said draft and trailer vehicles moving at said given velocity, said front wall of said trailer vehicle including edge means having a given length, said air outlet opening facing said edge means with said major dimension of said outlet opening parallel to said edge means, whereby said screen of higher velocity air flows from said outlet opening rearwardly across said open space to said edge means and parallel thereto, and said major dimension of said outlet opening providing for said screen of air jet said edge means to extend along said given length of said edge means.

4,357,046
RETRACTABLE VEHICLE STORAGE SHELF ARRANGEMENT
Andre P. Lalanne, Mesnil-St. Denis, France, assignor to Societe Anonyme Automobiles Citroen and Automobiles Peugeot, both of Paris, France
Filed Oct. 23, 1980, Ser. No. 199,700
Int. Cl.³ B60R *5/04*
U.S. Cl. 296—37.16 **7 Claims**

1. A retractable storage shelf assembly, particularly a rear

deck of a vehicle connected to a movable panel or door raisable with respect to the vehicle comprising, a shelf, hinge means connecting a rear portion of the shelf to the door for pivotal movement with respect to the door between a first position in which the shelf is generally horizontal, and a second position in which the shelf is substantially retracted toward the door, the door being movable between a lowered position and an elevated position, and retracting means for retracting said shelf from said first position to said second position in response to movement of the door from the lowered to elevated position, said retracting means comprising, a flexible element having one of its ends connected to said shelf at a location spaced



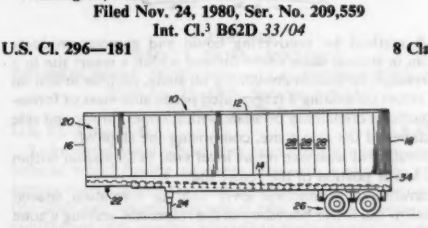
from the rear portion of the shelf, and its other end connected to an anchor point of the vehicle, bearing means connected to said door at a location above and remote from said hinge means and across which said flexible element extends for guiding a length of the element between its ends along a predetermined path with respect to the door, said bearing means being movable with the door away from said anchor point during movement of the door toward its elevated position to increase the length of flexible element between the bearing means and the anchor point and to decrease the length of the flexible element between the bearing means and the shelf, so that the shelf is retracted toward the door as the door is moved to its elevated position.

4,357,047

TRAILER WITH UNITARY BOTTOM RAIL-SCUFF PLATE

Sol Katz, Meadowbrook, Pa., assignor to Strick Corporation, Ft. Washington, Pa.

Filed Nov. 24, 1980, Ser. No. 209,559
Int. Cl.³ B62D *33/04*
U.S. Cl. 296—181 **8 Claims**



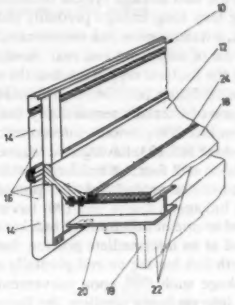
1. A trailer housing having top and bottom walls connected together by side walls and end walls, at least one of said walls including an access door, the improvement comprising a discrete metal scuff plate along the bottom end of each side wall, each scuff plate having its lower end connected to a support for the bottom wall and extending upwardly from the floor surface of the bottom wall for a height of at least 8 inches, the upper end portion of each scuff plate having an inner surface exposed to the interior of the housing, said side wall having an inner surface generally flush with said inner surface on said scuff plate, whereby the housing has a scuff zone adjacent the floor surface of the bottom wall with the scuff zone defined by the height of said scuff plate between the elevations of the floor surface and the lower end of said side wall, the scuff zone being characterized by a single thickness of said scuff plate.

4,357,048

SUPERSTRUCTURE FOR ROAD AND RAIL VEHICLES

Jürg Zehnder, Zurich, and Jann Grischott, Uster, both of Switzerland, assignors to Swiss Aluminium Ltd., Caippis, Switzerland

Filed Dec. 15, 1980, Ser. No. 216,088
Claims priority, application Switzerland, Dec. 20, 1979, 11326/79
Int. Cl.³ B62D *25/02*
U.S. Cl. 296—183 **9 Claims**



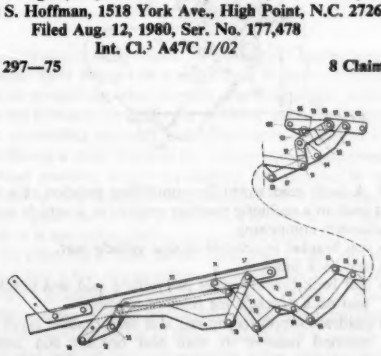
1. A superstructure for a vehicle comprising at least one longitudinal beam, a sidewall secured to said longitudinal beam so as to form a first unit, a cross-beam, a floor member secured to said cross-beam so as to form a second unit, buffer means provided between said first unit and second unit for reducing shock due to contact and means for securing said first unit to said second unit such that said first unit can slide with respect to said second unit parallel and transverse to the longitudinal axis of said longitudinal beam.

4,357,049

ONE-WAY RECLINER CHAIR

Walter C. Rogers, Jr., P.O. Box 685, Denton, N.C. 27239, and David S. Hoffman, 1518 York Ave., High Point, N.C. 27260

Filed Aug. 12, 1980, Ser. No. 177,478
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—75 **8 Claims**



1. A one-way recliner chair including a stationary frame including stationary armrests, a seat and back unit movable as

a one-piece structure relative to the stationary frame between a closed generally upright position and a reclining position, said seat and back unit including a seat frame having a soft construction along the front edge portion thereof, a footrest system including dual footrest supports mounted to said seat and back unit for movement between a closed position wherein the footrest supports are positioned one generally behind the other in generally vertical planes with one of the footrest supports being positioned below the front edge portion of the seat frame, and an extended position projected forwardly from the chair wherein the footrest supports are located in sloping but generally horizontal planes one behind the other, a linkage system mounting the seat and back unit for movement between said positions thereof relative to the stationary frame and for mounting the footrest supports relative to the seat and backrest unit for movement between said positions thereof; said linkage system including front and rear mounting links pivotally interconnected between the seat and frame unit and said stationary frame for moving the seat and back unit into a reclined position relative to the stationary frame when the chair occupant pulls-off the armrests, said linkage system including a footrest linkage including lazy tong linkage pivotally mounted to the seat and back unit, a transmission link interconnecting the lazy tong linkage and one of said front and rear mounting links (**54, 52**) for extending the footrest supports when the seat and back unit is moved into reclining position, said footrest linkage further including a pair of brackets respectively fixed to the footrest supports, a first link (**99**) pivotally interconnecting said footrest brackets, a second link (**93**) having two legs respectively pivotally connected to said footrest brackets, a third link (**87**) pivotally connected to the second link and pivotally connected to the lazy tong linkage, a fourth link (**90**) having one end pivotally connected to one of said footrest brackets and being pivotally connected at an intermediate portion thereof to said third link, said fourth link having an end pivotally connected to said lazy tong linkage such that upon movement of the seat and backrest unit into reclining position, the footrest supports will be moved from their retracted position below the seat and back unit to their extended position.

4,357,050

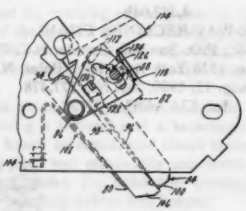
SILENT SEAT BACK RECLINER WITH QUICK RELEASE

Alfred J. Fisher, III, Grosse Pointe Farms, Mich., assignor to Fisher Corporation, Troy, Mich.

Filed Nov. 17, 1980, Ser. No. 207,633

Int. Cl.³ A47C *1/026*

U.S. Cl. 297—367 **2 Claims**



1. A latch mechanism for controlling rotation of a vehicle seat back to a reclining position relative to a vehicle seat, said mechanism comprising

a seat bracket attachable to said vehicle seat,

a seat back bracket,

a seat back bracket pivot pin joining said seat bracket and seat back brackets for relative rotation,

a quadrant supported by said seat back bracket pivot pin for rotation relative to both seat bracket and seat back bracket,

stop means on said quadrant for limiting rotation of said seat back bracket relative to said quadrant,

an arm pivot pin on said quadrant radially spaced from said seat back bracket pivot pin,

an arm extending between the arm pivot pin on said quadrant and said seat bracket for controlling the rotative position of said quadrant relative to said seat bracket, said arm having teeth on one side thereof,

a pawl support pin on said seat bracket,

a pawl on said pawl support pin having a toothed portion engageable with the teeth on said arm,

an arm clamp pin journaled in said seat bracket for lateral movement relative to said arm,

an arm clamp on said arm clamp pin engageable with said arm on the opposite side thereof from the teeth thereon,

a manual operator pivoted on said pawl support pin and movable between a locked and an unlocked condition, said manual operator having a cam surface thereon for biasing said arm clamp pin toward and away from said arm, and,

a cam plate journaled on said pawl support pin and controlled by said manual operator through a lost motion connection therebetween, said cam plate having a cam shoulder engageable with said arm clamp pin to hold said pin and arm clamp in the locked condition through a predetermined angular movement of said manual operator after release of said pin by the cam surface on said manual operator.

4,357,051

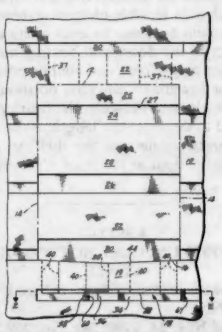
WITHDRAWAL OF GASES AND LIQUIDS FROM AN IN SITU OIL SHALE RETORT

Martin M. Siegel, Broken Arrow, Okla., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 2, 1980, Ser. No. 155,411

Int. Cl.³ E21C *41/10*; E21B *43/24*

U.S. Cl. 299—2 **46 Claims**



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed within a retort site in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale within upper, lower and side boundaries of the retort site, comprising the steps of:

excavating at least one retort level void in formation within a lower portion of the retort site;

excavating a production level void in formation spaced below the lower boundary of the retort site, leaving a zone of unfragmented formation between the lower boundary of the retort site and the production level void;

providing at least one liquid outlet line extending from the retort level void through said zone of unfragmented formation into the production level void;

providing at least one gas outlet line extending from the retort level void through said zone of unfragmented formation into the production level void separate from the liquid outlet line;

placing explosive in a remaining portion of unfragmented formation with the retort site adjacent the retort level void;

detonating such explosive for explosively expanding such remaining portion of formation toward at least the retort level void for forming a fragmented permeable mass of formation particles containing oil shale within the upper, lower, and side boundaries of the retort site, such a gas outlet line and such a liquid outlet line communicating with a lower portion of the fragmented mass;

establishing a retorting zone in an upper portion of the fragmented mass and advancing the retorting zone through the fragmented mass for producing liquid and gaseous products of retorting;

withdrawing such liquid products from the fragmented mass through such a liquid outlet line; and

separately withdrawing such gaseous products from the fragmented mass through such a gas outlet line.

4,357,052

DEVICE FOR DIRECTING THE RACK

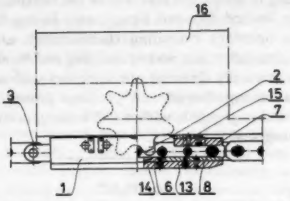
Klemens Pilarski, Gliwice; Stefan Ulczok, Katowice; Stanislaw Walkiewicz, and Wincenty Rudnicki, both of Gliwice, all of Poland, assignors to Centrum Konstrukcyjno-Technologiczne Maszyn Gorniczych "KOMAG", Gliwice, Poland

Filed Oct. 17, 1980, Ser. No. 197,824

Claims priority, application Poland, Nov. 29, 1979, 219976

Int. Cl.³ E21C *29/04*

U.S. Cl. 299—42 **4 Claims**



1. A device for directing the rack of a tieless feed gear to cooperate with a toothed driving wheel of a mining machine, said rack having a plurality of cylindrical pins, and a first and a second blade, said device comprising a guide shoe provided with an oblong external slipper and at least one oblong internal slipper, the distance between said slippers equaling approximately the diameter of the pins of the rack, and the slippers having a height equaling approximately the distance between the first and second blade of the rack.

4,357,053

WHEEL TRIM ASSEMBLY

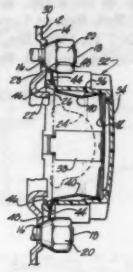
Edward G. Spisak, 35700 Oakwood La., Westland, Mich. 48185

Filed Jul. 21, 1980, Ser. No. 170,581

Int. Cl.³ B60B *7/00*

U.S. Cl. 301—37 R **8 Claims**

1. An ornamental wheel trim assembly for attachment to a vehicle wheel having an outer face with a plurality of uniformly spaced wheel securing nuts located on a circle concentric with said wheel, said wheel trim assembly comprising: a cup-shaped trim member adapted to be disposed axially of the wheel, a retaining member disposed in the cup-shaped member, guide means uniformly spaced in the side walls of the cup-shaped trim member to slidably receive and maintain said retaining member mounted relative to the cup-shaped member, wherein said retaining member is generally U-shaped with a diagonally extending bight portion and a pair of legs extending axially from said bight portion, said legs being disposed adjacent the wall of said cup-shaped member and said bight portion being disposed adjacent the bottom of said cup-shaped member, said retaining member having end portions for engagement with wheel securing nuts to detachably hold the cup-shaped member relative to the wheel.



4,357,054

ANTI-SKID CONTROL SYSTEM

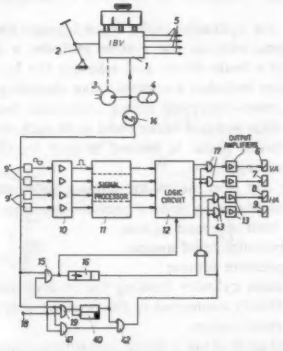
Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 39,971, May 14, 1979, abandoned. This application May 29, 1981, Ser. No. 268,507

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822143

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—10 **9 Claims**



1. An anti-skid braking system for a wheeled vehicle, including a brake fluid pump and a brake fluid pressure reservoir, sensors for generating wheel signals related to wheel motion, and a brake pressure controller for receiving said wheel signals and for controlling anti-skid braking pressure applied to said wheels during a skid; wherein the improvement comprises a brake fluid pressure sensor for sensing the pressure of said brake fluid in said pressure reservoir and for controlling an electrical signal due to low brake fluid pressure in said reservoir which is applied to said brake pressure controller; circuit means for effecting at least partial cancelling of said anti-skid braking action when said pressure sensor delivers an electrical signal after a predetermined period of time; said circuit means including a timing member which generates an electrical signal after a predetermined time to block actuation of a portion of said anti-skid braking pressure whereby, when said fluid pressure in said reservoir decreases, the anti-skid action by said pressure controller is at least partially cancelled.

4,357,055

HYDRAULIC BRAKE FORCE AMPLIFIER

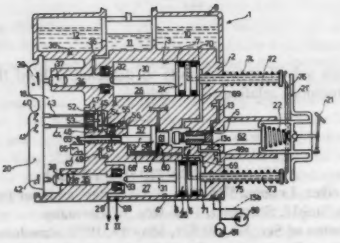
Heinz Leiber, Leimen, and Robert Mergenthaler, Heidelberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,089

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942552

Int. Cl.³ B60T *11/24*

U.S. Cl. 303—52 8 Claims



1. An hydraulic brake force booster for a vehicle braking system, wherein the system includes a brake pedal which exerts a brake-force; and wherein the hydraulic brake force booster includes: a control valve including a control slide,

a travel-imparting spring connected between said control slide and said brake pedal plate such that movement of the brake pedal is limited in part by the travel-imparting spring;

an end stop means for limiting movement of said control slide during normal pressure operation;

at least one main piston;

a pressure relief means;

a pressure source;

a main cylinder housing the at least one main piston and fluidly connected to the pressure source and the pressure relief means;

said control valve being operative to regulate fluid flow, and is operatively connected to the brake pedal such that the control valve is actuated by a brake-force related to movement of said brake pedal and wherein the control valve regulates fluid flow between the at least one main cylinder and said pressure source; and between the at least one main cylinder and the pressure relief means; an end stop means for limiting movement of said control slide during normal pressure operation,

a cutoff assembly including a barrier piston which is subject to an arresting pressure from said pressure source during normal operation, and wherein the cutoff assembly is operative to detect a failure in source pressure and to displace said end stop means for the travel-imparting spring in the event of such failure in source pressure;

said cutoff assembly includes a valve to release the arrest pressure of the barrier piston and further wherein, due to the brake-force said travel imparting spring biases the barrier piston in a direction opposite to that of the arresting pressure.

4,357,056

ANTIFRICTION BEARING FOR LONGITUDINAL MOVEMENTS OF A SHAFT

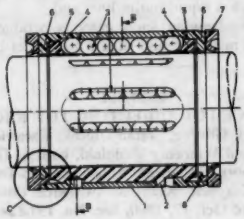
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim; Lothar Walter, Schweinfurt; Horst M. Ernst, Eltingshausen; Herbert Dobhan, Bergrheinfeld, and Peter Horling, Mainberg, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,377

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951586

Int. Cl.³ F16C *29/06, 33/78*

U.S. Cl. 308—6 C 17 Claims



17. A rolling bearing having an improved end seal comprising a housing, an end ring covering one end of the housing of said bearing to define the axial end of the bearing and including a radially inward directed flange, said flange having axially extending openings extending therethrough and distributed about its circumference, and an end ring seal having a plurality of axially inwardly directed arms aligned with said openings, said arms having shaped end portions passed through said openings and engageable within said bearing housing for securing said ring seal in position.

4,357,057

LAMINATED BEARING WITH IMPROVED LOW TEMPERATURE OPERATING CHARACTERISTICS

Robert R. Peterson, Hudson, and Daniel S. Ventura, Malden, both of Mass., assignors to Barry Wright Corporation, Newton Lower Falls, Mass.

Filed Jul. 27, 1981, Ser. No. 286,748

Int. Cl.³ F16C *27/08, 17/10*

U.S. Cl. 308—26 10 Claims

5. In a laminated bearing comprising a plurality of alternating and bonded together layers of elastomeric and substantially non-extensible material with the layers concentrically disposed about one another and a common axis so as to permit the bearing to support compressional loads applied generally normal to said layers and torsional loads applied about said axis, the improvement wherein at least one of said elastomeric layers comprises a first portion thereof having a first nominal damping coefficient and a second portion thereof having a second nominal damping coefficient, and a third portion

thereof, disposed axially between said first and second portions and having a third nominal damping coefficient less than that of said first and second portions, said damping coefficients selected so as to improve the uniformity of the strain distribution across said laminate during low temperature operation of the bearing.

4,357,058

SELF-CENTERING THRUST BEARING ASSEMBLY

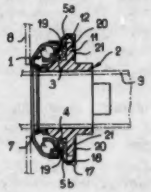
Claude Sonnerat, Annecy-le-Vieux, France, assignor to Societe Nouvelle de Roulements, Annecy, France

Filed Nov. 26, 1980, Ser. No. 210,667

Claims priority, application France, Dec. 4, 1979, 79 29788

Int. Cl.[3] F16D *13/60, 23/14;* F16C *19/00*

U.S. Cl. 308—233 3 Claims



1. A self-centering thrust bearing assembly for a clutch including a driving unit, said assembly comprising:

two bearing rings with interposed rolling members, the first of said rings being intended to cooperate axially with said driving unit of said clutch;

an axially movable support sleeve with a flange, driven for the clutching operation, said second ring being mounted in sliding contact with said support sleeve with a certain radial freedom for the self-centering process; and

resilient fastener means, said fasterner means being provided to exert a pinching stress on said second ring and said axially movable support sleeve, respectively, in order to maintain sliding contact between said second ring and said axially movable support sleeve, said resilient fastener means comprising:

two diametrically opposed fastening members exerting, respectively, a different pinching stress on said second bearing ring and said axially movable support sleeve so that the first of said fastening members constitutes a center of pivoting movement for said second bearing ring.

4,357,059

CONTAINER, IN PARTICULAR FOR TRANSPORTING FREIGHT BY AIR

Gerhard Mittelmann, Oehningen, Fed. Rep. of Germany, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

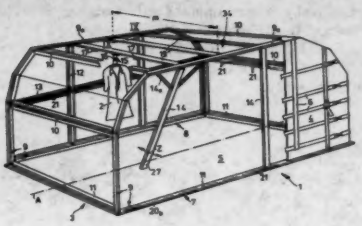
Filed May 18, 1979, Ser. No. 40,465

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824434

Int. Cl.[3] B65D *88/00;* A47F *5/10*

U.S. Cl. 312—321 11 Claims

1. A freight container for transporting hanging items and/or stackable items having a floor and a load supporting structural frame secured thereto, said frame including a plurality of load bearing rods running above said floor, the improvement comprising at least one support rod pivotably mounted on said frame and movable from a first load bearing position where said at least one support rod extends from said frame to said floor in a direction substantially perpendicular to said load bearing rods to a second non-load bearing position where said at least one support rod is substantially parallel to said load bearing rods wherein said at least one support rod is in said first position when transporting hanging items such that said at least one support rod aids in supporting said plurality of load bearing rods when said load bearing rods carry the hanging items wherein said at least one support rod is provided on the free end thereof with means for releaseably fixing said at least one



support rod to said floor when said at least one support rod is in said first position and to said frame when said at least one support rod is in said second position.

4,357,060

BUSINESS MACHINE FRAME TO HOUSING CONNECTION

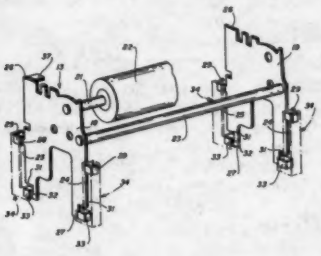
Lothar Kuhn, Frankfurt, Fed. Rep. of Germany, assignor to Adlerwerke vorm. Heinrich Kleyer, Nuremburg, Fed. Rep. of Germany

Filed Dec. 23, 1980, Ser. No. 219,577

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014284

Int. Cl.[3] A47B *95/00;* F16M *1/00*

U.S. Cl. 312—351 3 Claims



1. In combination with housing means for a business machine comprising a base portion and a cover portion releasably supported by said base portion, and machine frame means supporting functional machine elements, comprising spaced side frames,

means on said side frames and said base portion for supporting said machine frame solely in said base portion, comprising

first resilient means mounted on the lower corners of said side frames,

lugs extending from opposite side edges of said side frames between the lower and upper edge,

second resilient means mounted on said lugs, and

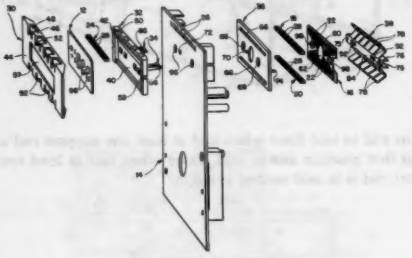
slotted formations on said base portion for receiving and compressing said first and second resilient means to thereby clampingly engage and secure said side frames against side to side, front to back and pivoting movement relative to said base portion.

4,357,061

ELECTRO-MECHANICAL PACKAGE OF VISUAL DISPLAY AND RELATED CIRCUITRY

John B. Crosby, Yorba Linda, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 28, 1980, Ser. No. 125,812
Int. Cl.[3] H01R *13/54*
U.S. Cl. 339—17 C 17 Claims



1. An electro-mechanical package comprising:

a visual display component having an electronically controlled display panel supported therein;

an integrated circuit component having a substrate carrying integrated electronic circuitry arranged to control the display panel;

a supporting member comprising a printed circuit board adapted to support both components and having circuitry which interconnects the circuitry in the package with external circuitry;

the visual display component and the integrated circuit component being mounted on opposite sides of the supporting member; and

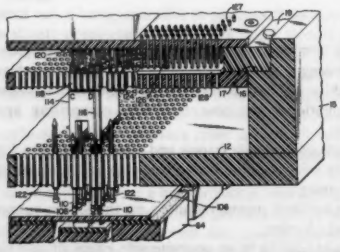
package-retaining means common to the visual display and integrated circuit components and extending through the supporting member to secure both components in properly aligned, electrically conducting relationship with the supporting member.

4,357,062

UNIVERSAL CIRCUIT BOARD TEST FIXTURE

Stephen M. Everett, Livermore, Calif., assignor to John Fluke Mfg. Co., Inc., Mountlake Terrace, Wash.

Continuation-in-part of Ser. No. 102,055, Dec. 10, 1979, Pat. No. 4,289,367. This application Oct. 17, 1980, Ser. No. 198,020
Int. Cl.[3] H01R *29/00*
U.S. Cl. 339—18 R 11 Claims



1. An apparatus for establishing electrical connections to test points on a circuit board wherein components on said circuit board are disposed with terminals located at integral multiples of standardized spacing comprising:

a perforate platform having a plurality of perforations for receiving contact probes, each of the perforations being disposed at integral multiples of said standardized spacing in a grid pattern, the perforations being separated from one another by a distance equal to a multiple of said standardized spacing;

a plurality of straight double-action conductive connector pins defining contact probes having a first end for contacting circuit board test points and an opposing actuating end, each pin having a shaft portion movable from a first rest position to which the pin shaft is spring-biased and a second actuated position upon pressure contact on said actuating end, said connector pins being mounted through said perforations of said platform in at least all locations corresponding to test points of a circuit board to be tested;

at least one rigid pin displacement means, said pin displacement means including at least one conductive path therethrough from a first face to an opposing second face and a plug connector on said second opposing face, said first face being adapted to be disposed with conductive paths in alignment with said standardized spacing of said perforations, said plug connector being mountable in socket means in a backing plate;

a backing plate removably mountable to said platform, said backing plate including socket means for mounting said displacement means to said backing plate;

means for joining said backing plate with said platform, including means for urging said displacement means into contact with said connector pins in order to actuate said connector pins by displacement into a position for engaging circuit board test points; and

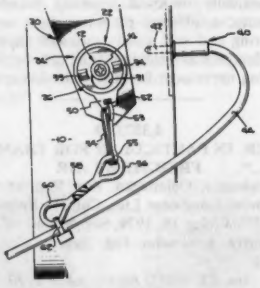
means for urging relative movement of said platform and said circuit board to place said actuated connector pins in engagement with the circuit board test points for establishing said electrical connections.

4,357,063

WASHER ANCHORING CONSTRUCTION

William T. Gray, 19612 Grandview Dr., Topanga, Calif. 90290

Filed Jun. 6, 1980, Ser. No. 157,140
Int. Cl.[3] H01R *13/639*
U.S. Cl. 339—75 P 2 Claims



1. In a washer anchoring construction for a strap supported portable musical instrument or the like having an elongated cord connected to the instrument body and attachment stud means carried by the body for detachable attachment to a supporting strap, the provision of:

a washer selectively attachable to the stud means;

and means attaching the washer to the cord at such a point along its length that the portion of the cord between said point and the point of connection of the cord to the body is not under tension, said washer including:

a receiver having a flat generally circular web having formed therein an eccentric opening;

a locking plate having a flat generally circular web having formed therein an eccentric opening;

means retaining said webs in adjacent relation and rotatable relative to one another whereby to place said openings, selectively, in registration and out of registration with one another,

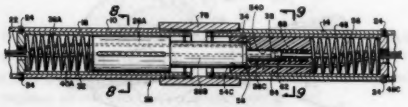
said locking plate being provided with means for facilitating rotation of the plate by the user comprising a pair of finger grips projecting from the plate and disposed symmetrically about the rotational axis.

4,357,064

EQUALIZING ELECTRICAL CONNECTION FOR INSIDE A PIPE

Richard D. Palone, West Fork, Ark., assignor to Morris Oil Field Supply Co., Morris and Chester Palone, Tulsa, both of, Okla., part interest to each

Filed Oct. 14, 1980, Ser. No. 196,844
Int. Cl.[3] H01R *13/62*
U.S. Cl. 339—89 R 7 Claims



1. Apparatus providing means of connecting together lengths of pipe while providing electrical connection between wires in each length of pipe comprising:

a first length of pipe;

a first sleeve received in one end of said first length of pipe, the sleeve having an outer end and an inner end, the outer end being adjacent the end of the length of pipe and the inner end having an internal shoulder;

a male connector of insulating material having an inner portion slidably received in said sleeve and an outer portion having a first cylindrical portion and a concentric reduced diameter end portion;

a spring within said sleeve compressibly positioned between said sleeve shoulder and said male connector;

a first male electrically conductive contact member affixed to the outer end of said male connector outer portion, the contact member having an opening therein receiving said reduced diameter portion;

a second male electrically conductive contact member affixed to the outer end of said male connector reduced diameter end portion;

conductors affixed to each of said first and second male contact members and extending within said first length of pipe;

a second length of pipe;

a second sleeve received in one end of said second length of pipe, the sleeve having an outer end and an inner end, the outer end being adjacent the end of the length of pipe and the inner end having an internal shoulder;

a female connector having an inner and outer end, the connector being of insulating material having a larger diameter concentric recess in one end and a smaller diameter concentric recess extending therefrom providing an internal shoulder, the larger diameter recess being at the connector outer end, the connector being slidably positioned in said second sleeve;

a spring positioned within said second sleeve compressibly extending between said connector inner end and said sleeve internal shoulder;

a first female electrically conductive contact member affixed to said internal shoulder of said female connector, the contact member having an opening therein coaxial with said smaller diameter recess;

a second female electrically conducting contact member received in said female connector smaller diameter recess;

conductors affixed to each of said first and second female contact members and extending within said second length of pipe;

means of removably connecting the end of said first length of pipe to the end of said second length of pipe;

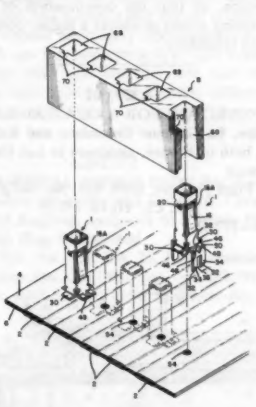
whereby said first and second pipes may be connected end-to-end with said male connector reduced diameter portion telescopically received within said female connector smaller diameter recess with said second male contact in engagement with said second female contact, and said male connector cylindrical portion telescopically received within said female connector larger diameter recess with said first male contact in engagement with said first female contact to thereby provide continuity between the conductors in said first length of pipe with said conductors in said second length of pipe.

4,357,065

TERMINAL FOR CONNECTION TO A FLAT CONDUCTOR

Lit-Yan Kam, Camp Hill, and Billy E. Olsson, New Cumberland, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 13, 1980, Ser. No. 159,018
Int. Cl.[3] H01R *4/24*
U.S. Cl. 339—97 R 8 Claims



1. An electrical terminal, stamped and formed from a single metal blank, and comprising:

a plate portion;

a rigid columnar lance defined by a multilateral slit in said plate portion and adapted to impale into an electrical conductor from a first side thereof,

said plate portion having a first bend and a second, reverse direction bend defining therebetween a leg portion projecting outwardly of the plane of said lance and adapted for registration against a side of said conductor impaled by said lance,

a pair of spaced apart tines integral with said lance and having free ends adapted to be curled back upon themselves straddling said lance and penetrating a second side of said conductor, and wedging said conductor against said lance impaled into the thickness of said conductor,

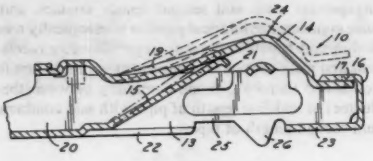
said tines in their uncurled form being offset from the plane of said lance.

4,357,066

PRINTED CIRCUIT BOARD EDGE TERMINAL

Thomas M. Cairns, Birmingham, and David G. Connors, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 27, 1980, Ser. No. 153,650
Int. Cl.³ H01R 13/50, 11/22
U.S. Cl. 339—176 MP 8 Claims



1. A printed circuit board edge coupling means for contacting a conductive portion of a printed circuit board, said coupling means including a terminal comprising:

a pair of spaced, generally parallel elongated side members having a front end and back end;

first spring means coupled to the back end of said side members adjacent a pivot point, said first spring means having an outside portion for contacting a conductive portion on the printed circuit board, so that contact to the conductive portion is forward of said pivot point; and

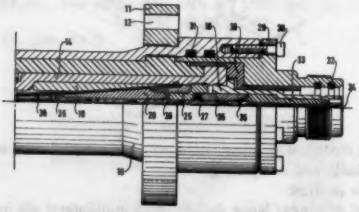
a second spring means coupled to the back end of said side members for contacting said first spring means on a side opposite from said outside portion contacting the conductive portion, so that the combination of said first and second spring means produces a higher contact force with improved reliability.

4,357,067

CONNECTOR FOR A COAXIAL CABLE

Jacques Labbe, La Garenne Colombes, and Roland Bernollin, Lamastre, both of France, assignors to Les Cables de Lyons, Lyons, France

Filed Nov. 14, 1980, Ser. No. 207,036
Int. Cl.³ H01K 17/18
U.S. Cl. 339—177 R 6 Claims



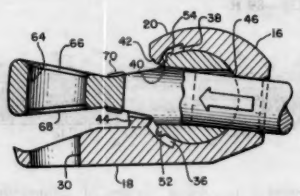
1. A connector for a coaxial cable which includes, from the inside to the outside, a central conductor or core, an electrically insulative covering, an outer conductor and a sheath, wherein said connector includes an outer body which surrounds an insulating sleeve disposed around a conductive connection member whose rear end is connected by means of a hoop to the outer conductor of said cable, said conductive connection member itself surrounding, firstly at its front end an annular conductor which opens out at the front end of the connector and secondly in its mid-portion two concentric parts of conical cross-section between which the end of said electrically insulative covering is gripped, said conical parts being clamped by means of a clamping component which abuts against a distance piece, an insulating sleeve being disposed between said annular conductor, said conductive connection member and an annular part connected to the front portion of said outer body and surrounding the front end of the connector, an insulating part also being disposed at the front end of said connector and a pin connected to the core of said cable, insulating bushes also being provided around said core in the mid-portion of the connector.

4,357,068

CABLE CLAMPING DEVICE

Paul V. Cornell, London, England, and Paul A. Cornell, Knockanore, Ireland, assignors to Pan Electric Corporation, Beverly Hills, Calif.

Filed Apr. 2, 1980, Ser. No. 136,413
Int. Cl.³ H01R 9/10
U.S. Cl. 339—266 R 23 Claims



1. A device for clamping a cable comprising:

a female member including a tail portion adapted for mounting on a supporting structure and an open, generally cylindrical head portion; and

a male member including a tail portion and a generally cylindrical head portion adapted to fit within said female head portion for rotation therein;

said tail portions being spaced apart when said device is in its open, cable-receiving position and in close proximity when said device is in its closed, cable-clamping position;

said female head portion having a cable-receiving opening and said male head portion having a cable-receiving bore, said opening and bore being in general axial alignment when said device is open and in axial misalignment when said device is closed;

said device having a first pair of opposed cable-clamping surfaces comprising an interior surface portion of said female opening and an interior surface portion of one end of said male bore; and

said device having a second pair of opposed cable-clamping surfaces comprising an interior surface portion of the other end of said male bore and a clamping surface on said female tail;

said male member shaped such that the head portion of the male member fits reversably within the head portion of the female member in first and second separate orientations, and the cable-receiving bore positioned in the male member such that, when closed with the male member in the first orientation, the device is adapted for clamping a smaller cable than when closed with the male member in the second orientation.

4,357,069

SOLDER-BEARING LEAD HAVING SOLDER-CONFINING STOP MEANS

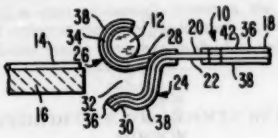
Carmen J. Milora, Andover, Mass., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Feb. 4, 1981, Ser. No. 231,568
Int. Cl.³ H01R 11/06
U.S. Cl. 339—275 R 4 Claims

1. A solder-bearing lead formed essentially from a base metal which tends to oxidize upon exposure to the atmosphere so as to become resistant to solder, which comprises:

an elongated stem which includes at least one surface having the base metal thereof partially coated with a metal coating which is readily wetted by solder for soldering of the stem to an associated article;

first and second resilient clamping fingers extending in opposed spaced relationship from the elongated stem to define a gap for the reception of a substrate therebetween, at least one of the clamping fingers defining an electrical contact finger having an inner surface for engaging a contact pad on the substrate and having an outer opposite surface which defines a continuation of the one surface of



the stem and which has the base metal thereof coated with a metal coating which is readily wetted by solder;

a solder preform attached to the metal-coated outer opposite surface of the electrical contact finger; and

a solder-confining stop formed on the one surface of the lead stem by an oxidized uncoated portion of the base metal between the solder preform on the electrical contact finger and the metal coating on the stem, for precluding flow of molten solder from the solder preform along the stem to the metal coating thereon during a reflow solder operation in which the electrical contact finger is soldered to the contact pad on the substrate.

4,357,070

INTERLOCKING ELECTRIC CONNECTORS

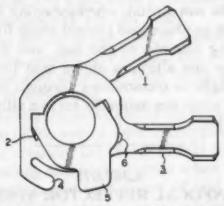
Kazunobu Fukushima, Toyota, and Masatomo Motokawa, Yokkaichi, both of Japan, assignors to Tokai Electric Wire Company Limited, Yokkaichi and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 29, 1980, Ser. No. 173,285

Claims priority, application Japan, Jul. 30, 1979, 54-105009[U]

Int. Cl.³ H01R *13/28*

U.S. Cl. 339—278 T **4 Claims**



1. An electric connector comprising a pair of substantially flat ring terminals each adapted to be secured to the end of an electric conductor wire, one of said terminals having an unobstructed bolt hole therethrough and the other of said terminals having an unobstructed hole therethrough through which a portion of said one terminal may be passed, each of said terminals including on its outer periphery an interlocking lug, the lug on said one terminal being on said portion thereof, the arrangement being such that said one terminal portion can be passed through the opening in said other terminal and said interlocking lugs engaged to maintain said one terminal in flatwise overlapping and underlapping engagement with said other terminal and with said bolt hole unobstructed for reception of a bolt therethrough.

4,357,071

OPTICAL FAULT SEEKING APPARATUS

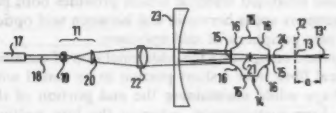
Siegfried Mankel, Geretsried; Klaus Ostertag, Munich, and Heinz Schreyer, Puchheim, all of Fed. Rep. of Germany, assignors to Erwin Sick GmbH, Optik-Elektronic, Waldkirch, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 138,034

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1979, 2925734

Int. Cl.³ G01N *21/86*

U.S. Cl. 350—6.8 **18 Claims**



1. Optical fault seeking apparatus for material webs comprising an optical scanning device including mirror wheel means and a light source for projecting beams of light onto a material web moving in a scanning plane of the apparatus to form beads of light thereon and for scanning said beads of light cyclically across the scanning plane transverse to the direction of movement of the material web, at least one light receiving device arranged to pick up light from the light beads formed on the web and to guide this light to at least one associated photoelectric converter for producing an electrical signal corresponding to the light received, and wherein said mirror wheel means has at least first and second alternately operating types of mirror surfaces of which the first projects a first light bead having a first characteristic onto said material web and the second projects a second light bead having a second different characteristic onto said material web.

4,357,072

SEALING OPTICAL FIBRES INTO PACKAGES

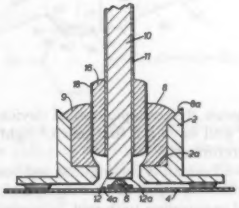
Robert C. Goodfellow, Brackely, and Andrew C. Carter, Greens Norton, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Continuation of Ser. No. 373, Jan. 28, 1978, abandoned. This application Dec. 22, 1980, Ser. No. 218,796

Claims priority, application United Kingdom, Jan. 28, 1978, 03543/78

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.20 **2 Claims**



1. A method of sealing an optical fibre into a required position within a package having a wall which is discontinuous so as to form an aperture therein, comprising the steps of:

providing a positioning device;

holding said optical fibre in said positioning device adjacent to an end portion of said optical fibre;

inserting said end portion in an axial direction through said

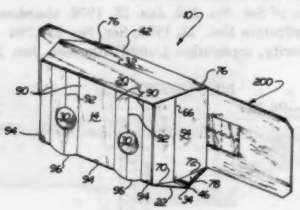
aperture formed in said wall of said package with said positioning device;
providing a piece of a low melting point material located adjacent to the periphery of said aperture;
heating said low melting point material until it becomes molten, and causing the material, when molten, to flow into said aperture so as to surround and form an annular ductile seal between said periphery of said aperture and said fibre;
maintaining said heat while moving said end portion in an axial and a radial direction with respect to the axis of said aperture in said wall of said package within said ductile seal with said positioning device until said end portion is in said required position relative to said aperture; and
subsequently allowing said ductile seal to cool and solidify, so that said end portion is retained in said required position by said solidified material which provides both mechanical support and a hermetic seal between said optical fibre and said periphery of said aperture;
said method comprising the additional step of metallising the optical fibre over a short portion to be sealed within the package while maintaining the end portion of the fibre free from metallisation, wherein the low melting point piece of material is solder and wherein, during the heating process, the solder adheres only to the metallised portion of the fibre and therefore does not come into contact with the light emitting device;
wherein the metallised fibre is prepared by a series of steps which include coating a portion of the fibre with a gold solution, subjecting the coated portion of the fibre to a heating process to impregnate the gold into the fibre, cooling the coated portion of the fibre, copper plating the fibre to form a copper plate, and finally tinning the copper plate.

4,357,073

COLLAPSIBLE STEREOSCOPIC VIEWER AND FILMSTRIP HOLDER THEREFOR

Robert G. Carver, Ashland, Ohio, assignor to Creative Cartons of Ashland, Inc., Ashland, Ohio

Filed Jul. 24, 1980, Ser. No. 172,062
The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.
Int. Cl.³ G02B *27/22*
U.S. Cl. 350—140 **24 Claims**



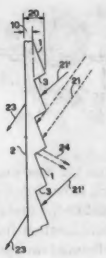
1. A collapsible stereoscopic optical device comprising:
(a) a front wall having a first pair of light-admitting apertures therethrough;
(b) a rear wall assembly having first and second panels, said assembly having a pair of viewing apertures therethrough in optical registration with said light-admitting apertures;
(c) first and second side walls wherein said front and side walls and said rear wall assembly panels are formed from a continuous lateral array of material;
(d) top and bottom walls; and
(e) a channel wall outwardly proximate said front wall having a second pair of light-admitting apertures therethrough in optical registration with said first pair of light-admitting apertures;
wherein said channel wall and said front wall form a lateral filmstrip-receiving channel.

4,357,074

METHOD AND DEVICE FOR DOUSING SUNLIGHT WITH A SEASONAL EFFECT

Gian V. Nardini, Via Chiocciola 53, 22060 Carimate (Como), Italy

Filed Jul. 28, 1980, Ser. No. 173,146
Claims priority, application Italy, Aug. 6, 1979, 24943 A/79
Int. Cl.³ G02B *17/00, 27/00*
U.S. Cl. 350—259 **14 Claims**



1. A method for seasonally dousing sunlight, comprising:
forming a transparent douser plate of a material having an index of refraction greater than unity and with a critical angle of internal reflection;
forming at least one first plane surface on said transparent douser plate;
forming at least one second plane surface on said transparent douser plate;
said at least one first plane surface and said at least one second plane surface being inclined at an inclined angle with respect to each other;
said index of refraction and said inclined angle being effective to cause light entering said douser plate from at least some directions through said first plane surface to become incident onto said second plane surface at angles equal to or exceeding said critical angle;
positioning said second plane surface substantially vertical and disposing said at least said one first plane surface facing the sun substantially at noon time and at said inclined angle with respect to said second plane surface whereby the sun altitude corresponding to the said directions which produce said critical angle for direct sunlight is a limiting altitude of the sun, and direct sunlight is blocked for sun altitudes above said limiting value and direct sunlight is transmitting through said douser plate for at least some sun azimuths for sun altitudes below said limiting value.

4,357,075

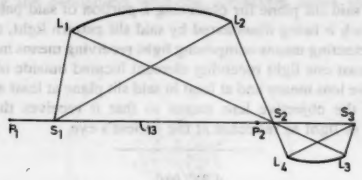
CONFOCAL REFLECTOR SYSTEM

Thomas M. Hunter, 109 Lonsdale Rd., London S.W. 13, England

Filed Jun. 26, 1980, Ser. No. 163,155
Claims priority, application United Kingdom, Jul. 2, 1979, 7922929
Int. Cl.³ G02B *5/10*
U.S. Cl. 350—294 **13 Claims**

1. A reflective focussing system for projecting an image of an object located at an object position on the axis of symmetry of the system to an image position along said axis, said system being characterized by two confocal concave reflector means, generated by rotating a quadratic conic section about said axis, of which the first reflector means is arranged with a first focus at said object position such that it receives radiation from the object travelling at angles between 30 degrees and 150 degrees

to said axis, and the second reflector means is arranged with a first focus centred on said axis, the second foci of said reflector



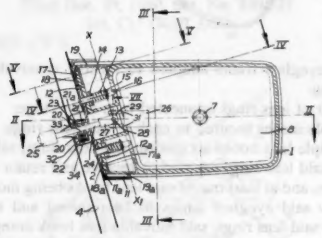
means being at least substantially common, the first focus of the second reflector means being located on the side of the second reflector means remote from the first reflector means.

4,357,076

CONTROL DEVICE FOR VEHICLE REARVIEW MIRROR

Stéphane Manzoni, 1, rue Pasteur, Saint-Claude, France (39200)

Filed Dec. 17, 1980, Ser. No. 217,420
Claims priority, application France, Sep. 1, 1980, 8000410
Int. Cl.³ G02B *7/18;* B60R *1/06*
U.S. Cl. 350—307 **8 Claims**



1. Control device for a vehicle rearview mirror in which a mirror support holding the mirror is hingedly mounted in a casing so as to pivot about two orthogonal axes and whose orientation is controlled from inside the vehicle by means of an operating handle with said mirror support having an arm cooperating with said operating handle, comprising

a support member constructed integral with the bodywork of the vehicle, and supporting a pivoting bearing rotatable about a substantially vertical axis;

said operating handle in the form of a stem mounted within said pivoting bearing for sliding and rotating in respect thereto, one end of which stem being provided with an operating member; and

a joint connecting the other end of the operating handle stem to said arm of the mirror support and having two orthogonal axes of rotation, the center of said joint being situated on the pivoting axis of the mirror when said mirror is in a neutral position and said center of said joint being movable in a horizontal plane in an arc whose center is situated on the pivoting axis of the mirror.

4,357,077

HIGH POWERED LASER WINDOW-MIRROR

George J. Yevick, 536 Nordhoff Dr., Leonia, N.J. 07605

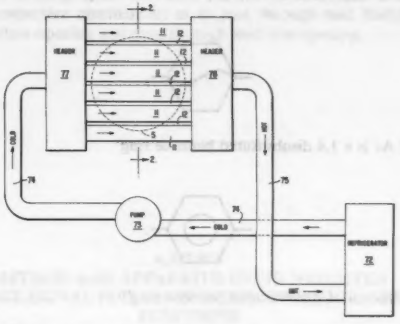
Filed Oct. 14, 1980, Ser. No. 196,759
Int. Cl.³ G02B *5/08*
U.S. Cl. 350—310 **6 Claims**

1. A window for a laser to facilitate the extraction of absorbed, injurious laser light energy from the window, the assembly including,

(a) a plurality of spaced mirrors which reflect laser light emanating from the interior of the laser back to the interior of the laser,

(b) a plurality of spaced strips which transmit laser light through the interior of the laser to outside of the laser,

(c) each said strip positioned between and contacting a portion of adjacent mirrors and being in heat conducting relation thereto,



(d) means for continually cooling each of said mirrors,

(e) whereby heat energy absorbed by the strips as laser light passes therethrough at least partially passes by conduction to the mirrors from whence it is carried away by the said means for cooling the mirrors.

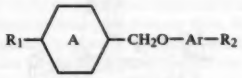
4,357,078

LIQUID CRYSTAL COMPOUNDS CONTAINING AN ALICYCLIC RING AND EXHIBITING A LOW DIELECTRIC ANISOTROPY AND LIQUID CRYSTAL MATERIALS AND DEVICES INCORPORATING SUCH COMPOUNDS

Neil Carr, Hull; George W. Gray, Cottingham, and Stephen M. Kelly, Hull, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

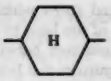
Filed Jan. 27, 1981, Ser. No. 228,979
Claims priority, application United Kingdom, Jan. 30, 1980, 8003129; Jun. 27, 1980, 8021068; Dec. 2, 1980, 8038553
Int. Cl.³ G02F *1/13;* C09K *3/34;* C07C *43/21, 43/225*
U.S. Cl. 350—350 R **10 Claims**

1. A liquid crystal compound exhibiting a low dielectric anisotropy and having a structural formula:



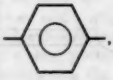
where R_1 is an alkyl group, R_2 is a group containing an alkyl group R and is either an alkyl group R, an alkoxy group OR, an alkylcarbonyloxy group OCOR or an alkoxycarbonyloxy group OCOOR, R_1 and R containing up to 18 carbon atoms,

is a trans-1,4 disubstituted cyclohexane ring

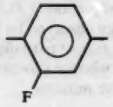


or a 1,4-disubstituted bicyclo(2,2,2)octane ring

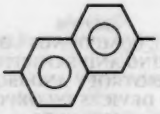
and Ar is a 1,4 disubstituted benzene ring



a 3-fluoro-1,4 disubstituted benzene ring



or a 2,6 disubstituted naphthalene ring



4,357,079

SLIT PATTERN PROJECTING APPARATUS HAVING ALIGNMENT DETECTING MEANS

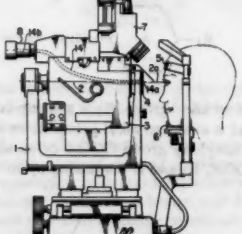
Yukinori Karasawa, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1979, Ser. No. 87,238

Claims priority, application Japan, Oct. 24, 1978, 53-130736

Int. Cl.³ A61B *3/14, 3/10*; G03B *29/00*

U.S. Cl. 351—7 **8 Claims**



1. Slit pattern projecting apparatus comprising objective lens means having an optical axis and means to position a patient's eye in fixed relation to said objective lens means, means for projecting a slit pattern light through said objective lens means to said patient's eye along a slit plane which contains said optical axis of the objective lens means, observing optical means having an observing optical axis obliquely intersecting said slit plane for observing a portion of said patient's eye which is being illuminated by said slit pattern light, alignment detecting means comprising light receiving means including at least one light receiving element located outside of said objective lens means and at least in said slit plane at least at one side of the objective lens means so that it receives the slit pattern of light as reflected at the patient's eye.

4,357,080

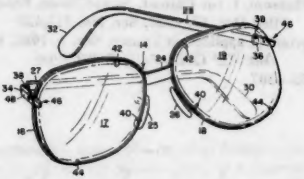
EYEGLASS FRAME HAVING REMOVABLE LENS

Charles I. Solomon, San Antonio, Tex., assignor to Sol-Optics, Inc., San Antonio, Tex.

Continuation-in-part of Ser. No. 124,541, Feb. 25, 1980, Pat. No. 4,304,469. This application Sep. 22, 1980, Ser. No. 189,229

Int. Cl.³ G02C *1/08, 1/00*

U.S. Cl. 351—86 **4 Claims**



1. An eyeglass frame adapted to receive removable lense comprising:

a. a pair of lens rings connected by a nosebridge;

b. temple means secured to each of said lens rings;

c. multiple lens hooks secured to said lens rings, said hooks and said lens rings adapted to receive and retain eyeglass lenses, and at least one of said lens hooks being movable to allow said eyeglass lenses to be retained and removed from said lens rings, said movable lens hook comprising a cylinder mounted on each of said lens rings and a hook secured to said cylinder and wherein said cylinder and said hook form an integral unit and said integral unit rotates.

4,357,081

PROJECTOR FOR THE PROJECTION OF A PANORAMIC IMAGE AND CAMERA FOR THE MANUFACTURE OF FILMS FOR A PROJECTOR OF THIS KIND

Kees Moddemeijer, Delft, Netherlands, assignor to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed Jan. 29, 1980, Ser. No. 116,451

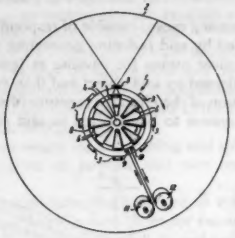
Claims priority, application Netherlands, Feb. 2, 1979, 7900865

Int. Cl.³ G03B *37/00*

U.S. Cl. 352—69 **11 Claims**

1. Projector for the projection of a panoramic image through an angle of substantially 360°, said projector comprising means for supporting a transparent film with a picture to be projected in such a way that part of the film takes on the shape of a cylindrical surface, a number of substantially identical condensers with a light source, said condensers being mounted inside the cylindrical surface and symmetrically with respect to the axis of said surface, said condensers being aligned and connected with the same number of substantially identical projection lenses, said lenses being mounted outside the cylindrical surface and also symmetrically with respect to the axis of the cylindrical surface, and means for rotating the condensers together with the projection lenses about the axis of the

cylindrical surface, characterized in that means are provided for the supply and removal of the film and for advancing the film along said cylindrical surface, and that the means for rotating the condensers with the projection lenses and the



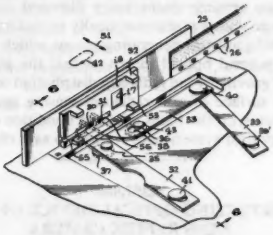
means for transporting the film are connected in such a way that the ratio of the angular velocity of the film to the angular velocity of the projection lenses is n:(n−1), wherein n is the number of projection lenses.

4,357,082

HIGH SPEED FILM ADVANCEMENT MECHANISM AND SYSTEM THEREFOR

Maurice G. Amesbury, 1106 E. Edna Pl., Covina, Calif. 91724

Filed Dec. 29, 1980, Ser. No. 220,525
Int. Cl.³ G03B *1/22*
U.S. Cl. 352—78 R **3 Claims**



1. A high speed film advancement mechanism comprising the combination of:

a support plate;

a pair of elongated members movably carried on said support plate substantially normal with respect to each other;

means carried on said support plate operably connected to said pair of members for driving the adjacent and opposing ends of said members in a substantially linear manner;

a selected one of said pair of members having an index pin on its end for registration with holes in the film while the other one of said pair of members has a claw thereon for advancing the film subsequent to registration by said selected member;

said drive means includes an eccentric drive for each of said members, and said eccentric drive means moves said index pin and said claw in a prescribed timed sequence whereby said index pin registers with the film opening and said claw will enter on adjacent film opening to drive the film for a distance equivalent to a stroke of said other member of said pair;

drive means for driving said eccentric means so as to effectively engage with each of said respective index and claw members so as to provide the necessary inseration and separation of the respective index pin and said claw with openings of the film;

said high speed film advancement mechanism is incorporated into a system having a film cartridge and a film backup plate over which a length of film travels;

said film length having opening along at least one edge;

said backup plate having an opening over which said film openings travel;

said index pin in registration with said openings in said backup plate and said film edge; and

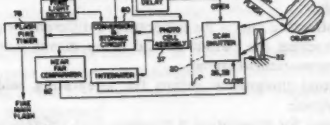
said index pin and said claw are folded over upon their respective members so as to pass through said backup plate opening and then through said film opening.

4,357,083

METHOD AND APPARATUS USING WEIGHTED RANGE SIGNAL FOR CONTROLLING PHOTOGRAPHIC FUNCTIONS

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 6, 1980, Ser. No. 193,891
Int. Cl.³ G03B *7/087, 13/20, 7/18*
U.S. Cl. 354—22 **29 Claims**



3. A camera comprising:

a lens assembly for directing image-carrying light rays along a given path from a photographic scene to a focal plane;

a shutter system for controlling the transmission of light from the scene to the focal plane so as to define an exposure interval during an evaluation period;

means for first actuating a light source, configured to produce radiation which essentially comprises simultaneously of both visible and non-visible electromagnetic frequencies, to direct a first pulse of said radiation of given intensity toward a subject in the scene prior to commencement of or in the early stages of said exposure interval to evaluate the subject including its distance from the camera, and for subsequently actuating the same source to direct a second pulse of said radiation toward the scene during said exposure interval to artificially illuminate the subject for photographic recording during exposure;

means for evaluating the intensity of primarily non-visible light from the scene during the first pulse of illumination; and

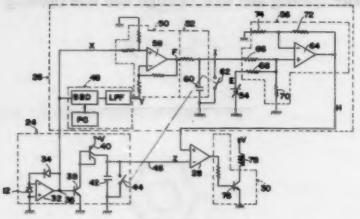
means responsive to the evaluated intensity of the scene resulting from reflection of the first pulse for controlling at least one photographic function, whereby non-visible frequencies from the source are utilized for subject evaluation and subsequent photographic control, and the visible frequencies from the same source are utilized for scene illumination for photographic recording during the exposure interval.

4,357,084

EXPOSURE CONTROL DEVICE FOR CAMERAS

Kazuo Kimura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 5, 1981, Ser. No. 271,020
Claims priority, application Japan, Jun. 9, 1980, 55-78044
Int. Cl.³ G03B 7/083
U.S. Cl. 354—24 7 Claims



1. An exposure control device for a camera comprising:

shutter means including leading and trailing shutter members located at the focal plane of the camera objective to be actuated for exposing film to scene light;

a light measuring circuit including a light receiving means arranged to measure the scene light reflected from the surfaces of said leading shutter and/or the film, said light measuring circuit producing a light measurement signal as a function of the intensity of the light received by the light receiving means;

first integration means for integrating said light measurement signal;

delay means for generating an output corresponding to said light measurement signal after a predetermined delay of time;

subtracting means for generating a difference signal by subtracting the output of said delay means from said light measurement signal;

second integration means for integrating said difference signal;

means for generating a constant first reference signal of a given level;

comparison means for detecting the relationship between the three signals from said first and second integration means and said constant level means, and generating a control signal when said three signals reach a given relationship; and

electromagnetic means for actuating said trailing shutter in response to said control signal.

4,357,085

FOCUS DETECTION DEVICE

Yukichi Niwa; Mitsutoshi Owada, both of Yokohama, and Noriyuki Asano, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1979, Ser. No. 43,250
Claims priority, application Japan, May 30, 1978, 53-64747
Int. Cl.³ G03B 3/00; G02B 15/18
U.S. Cl. 354—25 52 Claims

1. In an optical instrument having an image forming optical system which is movable along an optical axis to form an image of an object on a predetermined imaging plane, a system for detecting the focusing condition of said optical system with respect to said object, comprising:

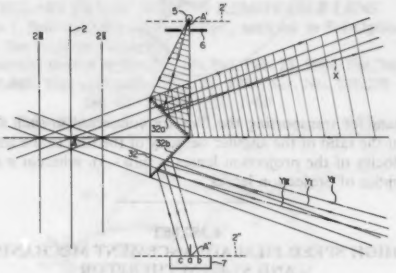
(A) radiation generating means for generating radiation;

(B) first optical means for projecting the radiation generated by said radiation generating means toward said object through a portion of an effective aperture of said image forming optical system, wherein the center of gravity of distribution, on a plane including said effective aperture, of the projected radiation is remote from the optical axis of said optical system;

said radiation generating means being disposed substantially in coincidence with a plane optically equivalent to said predetermined imaging plane which is set by said first optical means;

(C) radiation sensing means capable of responding to the radiation generated by said radiation generating means;

(D) second optical means for causing at least a part of the radiation reflected by said object and then entering through another portion of the effective aperture of said image forming optical system to be directed to said radiation sensing



means, wherein the center of gravity of distribution on the plane including the effective aperture, of the radiation directed to said radiation sensing means is remote from the optical axis of said optical system;

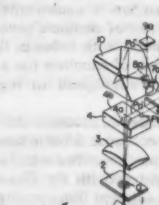
said radiation sensing means being disposed substantially in coincidence with a position optically equivalent to the location of said radiation generating means which is set by said first and second optical means so that the position of the center of gravity of the radiation distribution on an effective radiation surface of said radiation sensing means varies in accordance with the focus adjusted condition of said image forming optical system with respect to said object.

4,357,086

FOCUS DETECTING OPTICAL DEVICE OF A SINGLE LENS REFLEX CAMERA

Jun Shimomura, Chofu; Hideo Ikeda, Kamakura, and Yutaka Iizuka, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 28, 1981, Ser. No. 287,792
Claims priority, application Japan, Aug. 18, 1980, 55/116680[U]; Aug. 18, 1980, 55/116681[U]
Int. Cl.³ G03B 13/18
U.S. Cl. 354—25 6 Claims



1. In a focus detecting optical device for photoelectrically

effecting focus detection by the use of two restricted light beams passed through different areas in the pupil of a phototaking lens in a single lens reflex camera including a finder screen capable of imaging the light beam from the phototaking lens and a pentaprism having reflecting surfaces capable of reflecting a light beam passed through said screen toward an eyepiece lens system having an optical axis substantially orthogonal to said screen, the improvement comprising:

light splitting means for splitting a light beam in a direction substantially parallel to said optical axis on that side on which said eyepiece lens system is positioned from a light beam passing from said finder screen to the first reflecting surface of said pentaprism;

light distributing means for distributing said split light beam in two directions to provide said two restricted light beams;

a first and a second detecting lens system disposed in opposed relationship with each other for receiving said two restricted light beams distributed by said light distributing means;

first and second direction changing means for directing the lights passed through said first and second detecting lens systems in directions passing through the opposite sides of said eyepiece lens system; and

a first and a second photoelectric conversion element provided at positions capable of receiving the lights directed by said first and second direction changing means.

4,357,087

CAMERA INCORPORATED WITH A MOVABLE FLASH LIGHT DEVICE

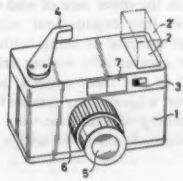
Kazuo Ikawa, Tokyo; Michio Hirohata, Kawasaki; Mutsuhide Matsuda, Yokohama, and Yukio Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 15,641, Feb. 27, 1979, abandoned, which is a continuation of Ser. No. 830,708, Sep. 6, 1977, Pat. No. 4,153,355. This application Mar. 12, 1981, Ser. No. 243,253

Claims priority, application Japan, Sep. 7, 1976, 51-106885

Int. Cl.³ G03B *7/081, 15/05*

U.S. Cl. 354—33 **8 Claims**



1. A flash device for a camera, comprising:

a discharge tube for flashing;

a main capacitor for supplying illumination energy to the discharge tube;

detecting means for detecting the charge voltage of the main capacitor, said means having charge completion indicating means for indicating that the charging of the main capacitor is completed;

trigger means for triggering the discharge tube to illuminate, said trigger means having a trigger capacitor;

first connecting means for electrically connecting the detecting means to the trigger capacitor of the trigger means;

a power source for charging the main capacitor;

a power source switch for connecting the power source to a ground line, said switch being changeable between a first position for connecting the power source to the ground line to complete a power supply circuit and a second position for disconnecting the power source to the ground line to inhibit completion of a power supply circuit; and

second connecting means for electrically connecting the first connecting means to the second position of the power source switch, said second connecting means connecting the first connecting means to the ground lien to form a short-circuit between the trigger capacitor and the detecting means when the power source switch is switched to the second position.

4,357,088

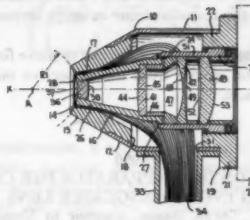
MACULA-DISC CAMERA WITH IMPROVED RESOLUTION

Oleg Pomerantzeff, Brookline, Mass., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 2, 1981, Ser. No. 239,448

Int. Cl.³ A61B *3/14*

U.S. Cl. 354—62 **13 Claims**



1. Optical image forming apparatus for use with a fundus camera having an optical axis, said apparatus comprising:

an inner hollow generally conical member having a forward end;

an outer hollow generally conical member having a forward end and disposed concentrically about and spaced from said inner member;

a contact lens disposed radially interiorly of said inner member, at the forward end of said inner member, through which the interior of an eye can be photographed; and

an array of optical fibers disposed in the space between said inner and outer members, surrounding said contact lens, for illuminating a field of approximately 18° of the fundus of the eye to be photographed;

wherein said contact lens is positioned to provide an optical image of the illuminated portion of said fundus.

4,357,089

ELECTRICAL CONTACT ARRANGEMENT FOR PHOTOGRAPHIC CAMERA WITH INTERCHANGEABLE LENS

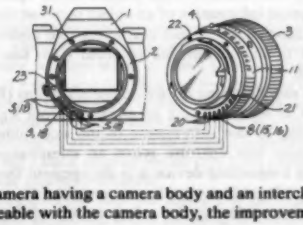
Zenichi Okura, Ichikawa; Yasuyuki Haneishi, and Shinsuke Kohmoto, both of Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1981, Ser. No. 237,987

Claims priority, application Japan, Feb. 26, 1980, 55-24447[U]

Int. Cl.³ G03B *17/00*

U.S. Cl. 354—286 **16 Claims**



1. In a camera having a camera body and an interchangeable lens engageable with the camera body, the improvement comprising:

a lens mount having a first flat surface;

a camera mount engaging the lens mount to join the lens to the camera body, the camera mount having a second flat surface abutting the first flat surface when the lens mount engages the camera mount;

one or more first electrical contacts in the lens mount movable normal to the first surface between a retracted position approximately flush with the first surface and an extended position projecting from the first surface;

spring means for urging the one or more first contacts toward the extended position;

one or more stationary second electrical contacts in the camera mount opening toward the second surface without protruding therefrom in alignment with the respective one or more first contacts when the lens mount engages the camera mount so the one or more first contacts normally bear against the respective one or more second contacts; and

means for manually retracting the one or more first contacts into a position spaced from the respective one or more second contacts.

4,357,090

EXPOSURE CONTROL APPARATUS FOR CAMERA WITH INTERCHANGEABLE LENS

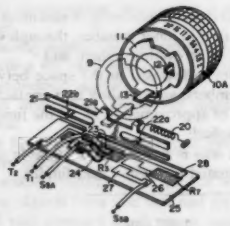
Yoshitaka Araki, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 216,279, Dec. 15, 1980, abandoned. This application Sep. 18, 1981, Ser. No. 303,576

Claims priority, application Japan, Dec. 28, 1979, 54/172191

Int. Cl.³ G03B *17/14*

U.S. Cl. 354—286 **6 Claims**



1. An improvement in camera comprising:

a device capable of accepting interchangeable lenses having a signalling device for transmitting information of the stop number of the maximum lens aperture and a diaphragm adapted to be controlled from said camera at the picture taking operation and further capable of detecting said information of the stop number of the maximum lens aperture, and

an exposure control device capable of calculating a combination of a diaphragm aperture and an exposure time for the exposure control at the picture taking operation from the optical information of an object received through said interchangeable lens and correcting said combination by means of the information obtained from said detecting device,

wherein said detecting device comprises means (R3, R7, 23, 26, CC2) for producing an electric output signal corresponding to said information of the stop number of the maximum lens aperture when an interchangeable lens having a signalling device is in engagement therewith, or an electric output signal corresponding to a particular diaphragm stop number when an interchangeable lens without a signalling device is engaged therewith.

4,357,091

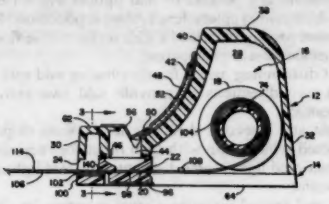
DISPOSABLE FILM PROCESSING KIT

Leonard V. Bendoni, Framingham, and William L. Hanna, Boston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 18, 1981, Ser. No. 264,571

Int. Cl.³ G03D *9/02, 5/06*

U.S. Cl. 354—304 **6 Claims**



1. A disposable kit for use in a film processor wherein it is adapted for use in the processing of a photographically exposed roll of instant type film, said kit comprising:

a housing comprising first and second sections adapted to be attached to each other so as to define a chamber for enclosing a roll of flexible sheet material and a passageway leading from said chamber to the exterior of said housing;

means defining a reservoir having a discharge which is in communication with said passageway;

a roller having a length of flexible sheet material wound thereupon with a first end secured to said roller and its opposite second end extending through said passageway to the exterior of said housing, said roller being rotatably supported within said chamber;

a supply of processing liquid which is adapted to flow from said reservoir through said discharge and onto one side of said sheet material; and

resilient means extending from said second section into engagement with the other side of said sheet material for urging the latter into engagement with said discharge when said sheet material is being withdrawn from said housing and for substantially sealing said discharge after said second end of said sheet material has been rewound into said chamber, whereby any residue from said processing liquid remaining in said reservoir or on said sheet material is substantially enclosed within said housing.

4,357,092

IMAGE RECORDING APPARATUS

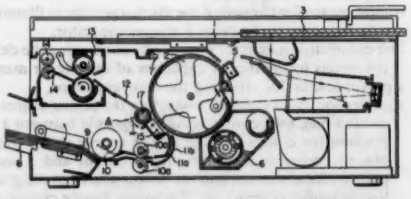
Mitsuru Nagoshi, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,370

Claims priority, application Japan, Sep. 14, 1979, 54/118032

Int. Cl.³ G03G *15/14, 15/24*

U.S. Cl. 355—3 TR **3 Claims**



1. In an image recording apparatus having the function that transfer paper is fed onto an image support and a developed

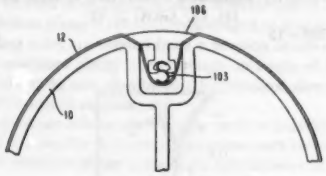
image is transferred onto the transfer paper by making use of a transfer electrode device positioned in juxtaposition and opposite to the image support, and the image transfer paper is separated from the image support by a separation device, the improvement which comprises a shield for the transfer electrode device open at the side facing and opposite to said image support and open at the end downstream in the direction of movement of the transfer paper, and in which said separation device comprises an electrically conductive grounded member positioned closely adjacent the open end to form an end plate for said shield and on the other hand closely adjacent said image support, whereby said grounded separation device attracts the transfer paper off the image support.

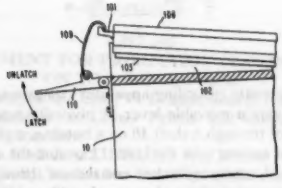
4,357,093

PHOTOCONDUCTOR TENSIONING DEVICE

Allison H. Caudill, Lafayette, Colo., and William H. Bruce, Jr., Walworth, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1980, Ser. No. 217,965
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **24 Claims**





1. An electrophotographic copier having a drum comprising:

a photoconductor having a form of a closed loop sleeve for mounting on said drum;

a channel on the drum periphery, running substantially parallel to the drum central axis, along the length of said drum;

an elongated bar having a cross sectional configuration for fitting in said channel;

means for latching said bar to said drum when said bar is in position within said channel; and

a spring positioned relative to said bar and said sleeve for applying tension to said sleeve in response to forcing of said sleeve partially into said channel by said bar;

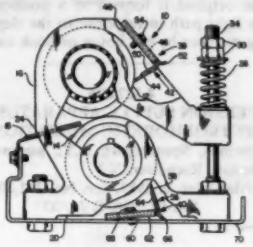
whereby said closed loop sleeve is held radially inwardly on the periphery on said drum by the tensioning action of said spring.

4,357,094

MOLDED SCRAPER FOR ELECTROPHOTOCOPIER FIXING ROLLER

Richard F. Zepko, Oxford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 22, 1980, Ser. No. 218,898
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU **5 Claims**



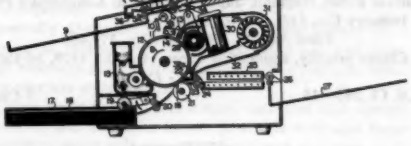
1. In combination, a pressure fixing roller for an electrophotocopying machine and a scraping device operatively associated with said roller for removing toner material accumulated on said roller, said scraping device comprising an angled blade having a scraping portion and a supporting portion oriented at an acute angle with respect to said scraping portion, and a plastic bracket surrounding the supporting portion of the angled blade and having a first, angled, reinforcing member extending along most of the downstream side of the scraping portion of said angled blade relative to the rotation of the roller and a second, smaller, angled, stiffening member extending along a small portion of the upstream surface of the scraping portion of the angled blade and terminating in a direction substantially parallel to the scraping portion of the angled blade.

4,357,095

ELECTROPHOTOGRAPHIC COPYING MACHINE

Kazuo Sugawa, Saitama, and Norio Amemiya, Hachioji, both of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jan. 26, 1981, Ser. No. 228,374
Claims priority, application Japan, Mar. 18, 1980, 55-34296
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **8 Claims**



1. An electrophotographic copying machine comprising

a cover which is located in opposing relationship with an exposure window when copying from an original in the form of a sheet and defines a conveyor unit for the original and which is angularly moved to a position remote from the exposure window when copying from a thick original and defines an extension of an original conveying path for allowing a thick original placed on a book carrier to move past the exposure window;

a detecting member disposed adjacent to the exposure window and projecting above the plane of the original con-

veying path so as to be depressed by the cover or the book carrier to thereby detect the presence of the cover or book carrier above the exposure window which is effective to intercept the incidence of extraneous light;

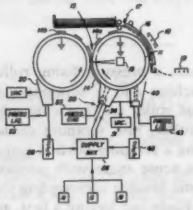
and a light shield member adapted to be moved from a position where it intercepts an exposure light path extending between the exposure window and a photosensitive drum on which an electrostatic latent image corresponding to an original is formed to a position opening the exposure light path in response to the depression of the detecting member by the cover or book carrier.

4,357,096

DISPERSION SUPPLY APPARATUS FOR PHOTOELECTROPHORETIC MIGRATION IMAGING

Clyde L. Fetterman, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,302
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 P **9 Claims**



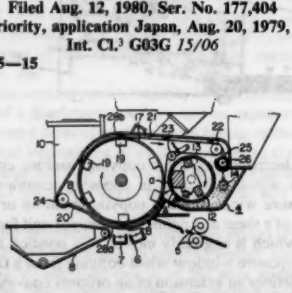
1. In migration imaging apparatus of the kind using an imaging layer comprising a liquid dispersion of electrophotosensitive image particles and a carrier, said apparatus having an imaging zone, a dispersion application zone, means moveable between said application and imaging zones for transporting such an imaging layer from said application zone through said imaging zone and means for subjecting such a transported layer to migration image inducing electrical field and illumination at said imaging zone, an improved device for applying such a layer on said transporting means, said device comprising atomizing nozzle means, located at said application zone, for spraying a continuous, uniformly thick layer of such liquid dispersion onto said transporting means.

4,357,097

ELECTROSTATIC RECORDING APPARATUS HAVING A TONER RECOVERING DEVICE

Junichi Koiso, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1980, Ser. No. 177,404
Claims priority, application Japan, Aug. 20, 1979, 54-105747
Int. Cl.³ G03G *15/06*
U.S. Cl. 355—15 **3 Claims**



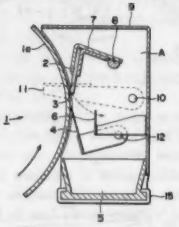
1. In an electrostatic recording apparatus having a drum, means forming an electrostatic image thereon, a developing device including a supply bin containing toner and means applying said toner to said drum for changing a latent image to a visible image, and cleaning means scraping off residual toner from said drum, the combination of a toner recovery device comprising a hollow rotatable cylinder mounted coaxially with said drum for rotation therewith, a plurality of circumferentially spaced magnets mounted about the inside peripheral surface of said cylinder, an idler spaced from said cylinder and rotatably mounted in said bin above the toner contained therein, an endless belt passing about said cylinder and over said idler, and means directing the toner scraped from said drum into contact with said belt, whereby said scraped toner adheres to said belt where the latter passes about said cylinder, under the attraction of said magnets, and is carried by said belt to said idler and drops into the bin of said developing device.

4,357,098

ELECTROSTATIC RECORDING APPARATUS

Koichi Endo, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1980, Ser. No. 193,885
Claims priority, application Japan, Oct. 9, 1979, 54/130429
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **4 Claims**

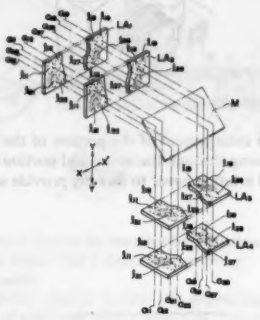


1. An electrostatic recording apparatus comprising a cleaning device having a movable lever **11** pivotally supported at one end thereof through a shaft **10** on a housing, a plate member **13** which is moved with the lever **11** around the shaft **10**, a plate member **14** connected at one end thereof through a shaft **10***a* with a first portion of the plate member **13**, an intermediate plate member **17** pivotally connected at one end thereof through a shaft **10***b* with a second portion of the plate member **13**, a plate member **18** pivotally supported at one end thereof through a shaft **8** by the housing **9**, a shaft **18***a* for connecting the other end of the intermediate plate member **17** with the plate member **18**, a tension spring **20**, one end of which is fixed to the housing **9** and the other end of which is fixed to the shaft **18***a*, a toner scraping member **2** including a tip end **3** which is movable along a path between a position where the tip end **3** of the toner scraping member **2** is in contact with an image forming member **1***a* and a position where the tip end **3** of the toner scraping member **2** is apart from the image forming member **1***a* and fixed to the plate member **18**, and a cleaning member **6** arranged on the path of the tip end **3** for the toner scraping member **2**, the cleaning member **6** being operable to scrape off residual toner attached to the tip end **3** of the toner scraping member **2** when the tip end **3** moves along the path past the cleaning member **6**.

4,357,099
OPTICAL IMAGING SYSTEM

Katsumi Taguchi, Kobe; Yuji Nishioka, Kishiwada, and Munco Kuroda, Matsubara, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 28, 1981, Ser. No. 287,624
Claims priority, application Japan, Aug. 4, 1980, 55-107608
Int. Cl.³ G03B *27/44*
U.S. Cl. 355—46 **11 Claims**



1. An optical imaging system comprising:

at least one pair of multilens plates having a plurality of lenses molded from the same mold wherein one of the pair of multilens plates is operatively arranged so that its corresponding sides are rotated from a position relative to the other multilens plates sides through an angle of 180 degrees about an axis parallel to a longitudinal direction of the other multilens plate, and

reflecting means having a reflecting surface parallel to the axis of rotation for deflecting the optical path between the pair of multilens plates once or an odd number of times.

4,357,100
ARRANGEMENT FOR PROJECTION COPYING MASKS ON TO A WORK PIECE

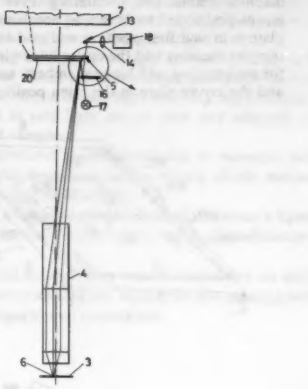
Herbert E. Mayer, and Ernst W. Löbach, both of Eschen, Liechtenstein, assignors to Censor Patent- und Versuchs-Anstalt, Vaduz, Liechtenstein

Filed Jan. 2, 1980, Ser. No. 109,169
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1979, 2900921
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—62 **3 Claims**

1. In an apparatus for the projection copying of an image of a mask onto a workpiece, the mask having an alignment pattern of marks at a surface thereof, said workpiece having adjustment marks on a surface thereof provided with a photosensitive layer, a beam of exposure, electromagnetic radiation passing through said mask and a projection lens along an optical axis thereof onto said workpiece, said lens being completely corrected at the wavelength of said exposure electromagnetic radiation, the improvement which comprises:

means for the adjustment exposure of the marks at one of said surfaces; and

means including said lens and a path formed with a stigmatic defect changing an object point to a line image extending with selectively a sagittal and a meridional orientation with respect to said optical axis for projecting the adjustment-exposed marks onto a plane coplanar with the other of said surfaces for positioning of the projected images of said marks relative to the marks on said other of said surfaces, and wherein:



said marks of said surfaces include lines which extend with the same orientation pattern with respect to said axis.

4,357,101
MECHANISM FOR SUPPORTING AN ORIGINAL DOCUMENT COVER LID OF AN ELECTROSTATIC COPYING APPARATUS

Koichi Sasaki, Osaka; Yasuji Sumida, Nara, and Hiroshi Ishida, Ibaragi, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Division of Ser. No. 29,053, Apr. 11, 1979, Pat. No. 4,295,731.
This application Jul. 23, 1980, Ser. No. 171,536
Claims priority, application Japan, Apr. 17, 1978, 53-45490; Apr. 17, 1978, 53-50972[U]; Apr. 17, 1978, 53-50973[U]; Apr. 19, 1978, 53-47309; May 23, 1978, 53-61822; May 23, 1978, 53-70043[U]; May 23, 1978, 53-70044[U]; May 23, 1978, 53-70045[U]; May 23, 1978, 53-70046[U]; May 23, 1978, 53-70047[U]; May 30, 1978, 53-65949; May 30, 1978, 53-74580[U]; May 30, 1978, 53-74581[U]; May 30, 1978, 53-74582[U]; May 31, 1978, 53-66119
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 **3 Claims**

1. A mechanism for supporting a cover lid of the type movable between a closed position covering a surface of a machine frame and an open position spaced from the surface, said mechanism comprising:

a generally U-shaped support member for supporting a cover lid, said support member including a pair of arms;

hinge members adapted to be mounted on a machine frame for rotation about an axis;

said arms being fixed to said hinges, such that said support member and the cover lid are pivotable with said hinge members about said axis between closed and open positions of the cover lid;

support pieces fixed to said hinge members for rotation therewith about said axis;

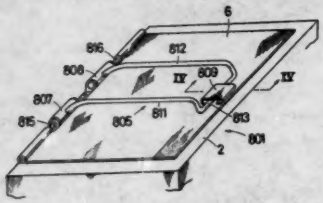
first biasing means connected to said support pieces for urging said hinge members, said support member and the cover lid to rotate about said axis in a first direction toward the open position of the cover lid;

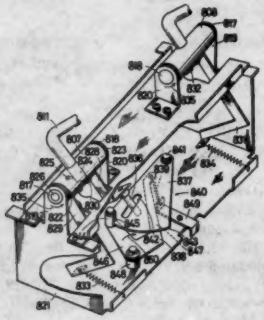
a revolving plate adapted to be pivotally mounted on the machine frame, said revolving plate having an arc-shaped edge having therein a notch, said revolving plate further having therein an alongated opening;

a support bar fixed to and extending from one of said hinge members into said elongated opening, such that rotation of said hinge members about said axis causes said support bar

to pivot said revolving plate between first and second positions;

an oscillating lever adapted to be pivotally mounted on the machine frame, said oscillating lever having projection means positioned to fit in said notch when said revolving plate is in said first position and said hinge members, said support member and the cover lid are in the open position, for maintaining said hinge members, said support member and the cover plate in the open position;





whereby manual rotation of said hinge members, said support member and the cover lid in a second direction toward the closed position of the cover lid causes said supporting bar to pivot said revolving plate toward said second position, thereby forcing said projection means out of said notch and onto said arc-shaped edge; and

second biasing means for urging said oscillating lever toward said revolving plate and thereby for urging said projection means toward said arc-shaped edge.

4,357,102

PHOTOGRAPHY SYSTEM WITH LARGE LENGTH TO WIDTH PICTURE FORMAT RATIO

Jack Taren, 1084 Vistagrande, Pacific Palisades, Calif. 90272, and J. Herbert Klein, 11728 Wilshire Blvd., Los Angeles, Calif. 90025

Filed May 4, 1981, Ser. No. 259,835
Int. Cl.³ G03B *27/32*
U.S. Cl. 355—77 **5 Claims**

1. A method of providing a length to width picture format ratio greater than 2.0 with a camera having a viewfinder, including the steps of:

(a) masking off an horizontal portion in the viewfinder so that the scene viewed has a length to width ratio greater than 2.0;

(b) photographing a desired scene with said camera as viewed through the unmasked portion of the viewfinder;

(c) developing the exposed film;

(d) masking off a portion of the film gate in an enlarger in precisely the same manner as the viewfinder of the camera was masked;

(e) providing a printing paper on said enlarger having a length to width ratio corresponding to the length to width ratio in proportion with the length to width ratio of the unmasked portion of said film gate; and

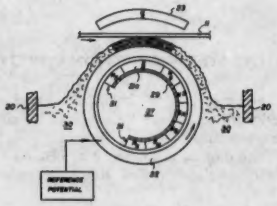
(f) printing an enlargement of the portion of the picture on the film passing through the unmasked portion of the film gate on said printing paper to thereby provide said picture format.

4,357,103

ELECTROGRAPHIC APPARATUS AND METHOD FEATURING COMPRESSED-FIELD, MAGNETIC BRUSH DEVELOPMENT

Arthur S. Kroll, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 27, 1981, Ser. No. 247,977
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 DD **11 Claims**



1. In electrographic apparatus of the kind including a development station and means for moving an image member along an operative path which includes a development zone within said development station, an improved magnetic brush development device comprising:

(a) developer transport means, located at said development station, for moving successive quantities of magnetic developer along a transport path extending to, adjacent and past said development zone, said transport means having primary magnet means for forming a magnetic field of predetermined magnetic polarity pattern which is operative upon developer transported adjacent said development zone; and

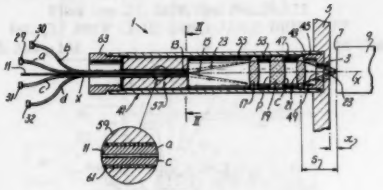
(b) magnetic counterpoise means, located across said operative path in opposing relation with said primary magnet means, for forming a magnetic field having a magnetic polarity pattern which is repelling to said predetermined polarity pattern.

4,357,104

MONITORING DISTANCE VARIATIONS

Ian Davinson, Darley Abbey, England, assignor to Rolls-Royce Limited, London, England

Filed Dec. 16, 1980, Ser. No. 217,146
Claims priority, application United Kingdom, Dec. 21, 1979, 7944134
Int. Cl.³ G01C 3/08; G01J 1/20
U.S. Cl. 356—4 21 Claims



1. An optical device for monitoring variations in the distance between an object and a datum, comprising:

a light source;

an astigmatic optical system for projecting an astigmatic image of said light source onto said object, said astigmatic optical system including said datum; and

image shape detector means for detecting changes of shape of said astigmatic image on said object due to said variations in the distance between said object and said datum, and for producing a monitor signal whose value is dependent on the shape of said astigmatic image on said object:

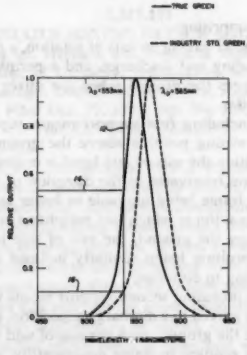
said astigmatic optical system being arranged such that light reflected from said astigmatic image on said object passes back through said astigmatic optical system and is thereby projected onto a light-receiving surface of said image shape detector means as an astigmatic image of said astigmatic image on said object, said light-receiving surface of said image shape detector means being located in the proximity of said light source.

4,357,105

BLOOD DIAGNOSTIC SPECTROPHOTOMETER

Thomas J. Loretz, Sturbridge, Mass., assignor to Buffalo Medical Specialties Mfg., Inc., St. Petersburg, Fla.

Filed Aug. 6, 1980, Ser. No. 173,801
Int. Cl.³ G01N 21/25, 21/35, 33/48
U.S. Cl. 356—40 6 Claims



1. A high accuracy portable hemoglobinometer comprising:

means for deriving power from at least one portable power cell;

solid-state means for regulating the current output of said power cell;

solid-state light-emitting diode means having an unfiltered peak output wavelength not longer than about 553 nanometers connected to be powered by said regulated current output so as to be driven at constant brightness;

filter means having a long-wavelength transmission cut-off of not more than about 565 nanometers interposed in the path of the light output of said light-emitting diode means;

means interposed in said light output path and adapted to receive a blood sample;

solid-state photodetector means positioned to measure the intensity of light from said light-emitting diode means transmitted through said sample;

solid-state means arranged to logarithmically convert a light intensity measurement signal from said photodetector means;

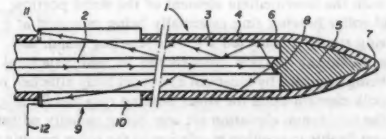
and reflective solid-state display means responsive to said logarithmic conversion means to display the quantitative result of said logarithmic conversion.

4,357,106

PROCESS AND DEVICE FOR THE OPTICAL MEASUREMENT OF TEMPERATURE AND PROCESS FOR THE PRODUCTION OF A SUITABLE PROBE

Jean D. Tschirren, Grassiliere 12, 2016 Cortaillod; Gilbert C. Widmer, Pont-de-Vaux 8, 2525 Le Landeron; Jean-Paul Pellaux, Petits Chenes 2, 2000 Neuchatel, all of Switzerland; Andre Coche, Rue d'Offendorf 1, 67000 Strasbourg, and Marcel R. Samsel, Rue Marcel Weinum 10, 67100 Strasbourg, both of France

Filed Sep. 26, 1980, Ser. No. 190,942
Claims priority, application Switzerland, Jan. 9, 1980, 124/80
Int. Cl.³ G01J 5/48
U.S. Cl. 356—44 14 Claims

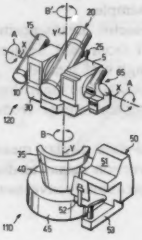


1. A process for the optical measurement of temperature employing a source for emitting light in a given range of wavelengths, a light-conductive device for transmitting light within at least a part of the wavelength range, a cholesterol-crystal probe and a detector device, characterized by filtering the light emitted by the source so as to produce a light which sweeps continuously and uniformly said range of wavelengths, transmitting the light thus produced through said light conductive device to the said cholesterol-crystal probe, detecting at least a part of the light reflected by the said crystals by said detection device, and measuring the temperature in the vicinity of the probe by measuring the sift between a reference signal produced at the start of each sweep cycle and a peak signal corresponding to the maximum reflection of the light on the crystals for a given wavelength of the said wavelength range.

4,357,107
FLIGHT TRAJECTORY AND OBSERVATION THEODOLITE

Walter Rösli, Zürich, Switzerland, assignor to Contraves AG, Zürich, Switzerland

Filed Dec. 29, 1980, Ser. No. 220,507
Claims priority, application Switzerland, Feb. 1, 1980, 830/80
Int. Cl.³ B01C *1/00*; F16M *11/12, 11/14*
U.S. Cl. 356—147 12 Claims



1. In a flight trajectory measuring and observing theodolite composed of a stand portion and a measuring portion containing two housings arranged in spaced relationship from one another upon a yolk element and serving for the mounting of optical devices, especially a telescope and a telescopic sight, a stand element of the stand portion together with the measuring portion being rotatable in relation to a socket element which is non-rotatably mounted at a foundation about a vertical azimuth rotational axis and the telescope along with the telescopic sight are pivotably mounted about a common horizontal elevation tilt axis, the improvement which comprises:

the stand portion being composed essentially of the socket element, the stand element and an intermediate element;

a leveling stand operatively connected with the stand portion and arranged at the center thereof;

said stand portion and said leveling stand forming a structural unit;

said leveling stand being mounted at one end upon a support element non-rotatably connected at the foundation and being radially adjustable and fixable in position for aligning the vertical azimuth rotational axis in relation to the support element;

the other end of the leveling stand having mounted thereat a roller bearing ring which is rigidly connected for rotation with the intermediate element of the stand portion;

said roller bearing ring essentially being mounted at a base ring rigidly connected with the leveling stand; and

the measuring portion constructed as said structural unit being mounted by means of a support body attached to the yolk element upon the roller bearing ring and for aligning the horizontal elevation tilt axis being radially adjustable and fixable in position in relation to the roller bearing ring.

4,357,108
METHOD FOR REPRODUCTON OF OBJECT SURFACES

Howard K. Stern, Greenlawn; Joseph A. Ross, Fort Salonga, and Paul Di Matteo, Huntington, all of N.Y., assignors to Robotic Vision Systems, Inc., Melville, N.Y.

Filed Jun. 6, 1980, Ser. No. 157,030
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—376 8 Claims

1. A method for use in determining the spatial location of the points on the surface of an object comprising the steps of:

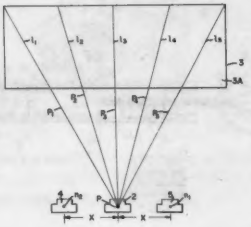
sequentially projecting in rapid succession different radiant energy patterns onto the object surface;

making separate records from a first location of the irradiated object surface during said sequence of projections;

making separate records from a second location displaced from said first location of the irradiated object surface during said sequence of projections;

and utilizing said records made at said first and second locations to spatially locate points on said object surface, said step of utilizing comprising:

identifying a first set of points all of which appear in each of a first group of said records made at said first location and none of which appear in any other records made at said first location;



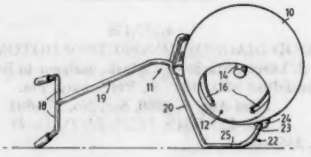
identifying a second set of points all of which appear in each of a second group of records made at said second location, said second group of records being made during the making of said first group of records;

and determining the spatial location of points on said object surface with said first and second sets of points.

4,357,109
MIXER

Stanley R. Blakeway, 26 Barbigal St., Stafford, Queensland, Australia (4053)

Filed Jul. 15, 1980, Ser. No. 169,263
Claims priority, application Australia, Jul. 18, 1979, PD 9621
Int. Cl.³ B28C *5/20, 7/16*
U.S. Cl. 366—55 5 Claims



1. A mixer comprising:

(a) a mixing bowl having an axis of rotation, a mouth at one end for loading and discharge, and a peripheral portion which engages the ground when the mixer travels to a discharge site;

(b) a frame including first support means supporting said bowl in a mixing position above the ground, in which mixing position the axis of said bowl is inclined upwardly in a direction transverse to the direction of travel of the mixer, said frame being movable to lower said bowl to a travelling position in which said peripheral portion of said bowl engages the ground, the axis of said bowl in such travelling position being similarly inclined upwardly to permit mixing to continue;

(c) said frame including second support means which, when said bowl is moved to a discharging position, supports said bowl above the ground, with the axis of said bowl in such discharging position inclining downwardly, and

(d) a handle attached to said frame for steering the mixer when the mixer is propelled with said bowl in said travelling position, said handle being moved parallel to the

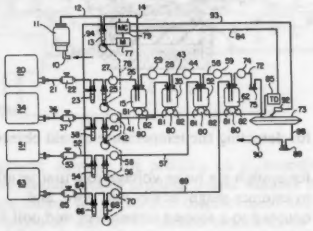
direction of travel of said mixer when the bowl is moved from its mixing position to its travel position, and being moved transversely to the direction of travel of said mixer when said bowl is moved from said travelling position to a discharge position.

4,357,110

MIXING APPARATUS

Henry F. Hope, and Stephen F. Hope, both of 2421 Wyandotte Rd., Willow Grove, Pa. 19090

Filed Sep. 17, 1979, Ser. No. 76,172
Int. Cl.³ B01F *15/02*; G05D *11/02*; B01F *5/12*
U.S. Cl. 366—132 **14 Claims**



1. Mixing apparatus comprising, in a closed liquid system,
a supply connection for a first supply of liquid,
a first mixing chamber comprising a receptacle,
means for intermittently delivering a measured quantity of liquid from said first supply connection to the lower portion of said first mixing chamber,
a supply connection for a second supply of liquid,
means for intermittently delivering a measured quantity of liquid from said second supply connection to said first mixing chamber,
means comprising a pump externally disposed with respect to said first mixing chamber and having inlet and delivery connections connected to the lower portion of said mixing chamber for continuously agitating the liquid in the lower portion of said first mixing chamber,
the intermittent supplying of said measured quantities of said liquids advancing the liquid through said mixing apparatus, and
liquid storage means for the reception of liquid from said receptacle.

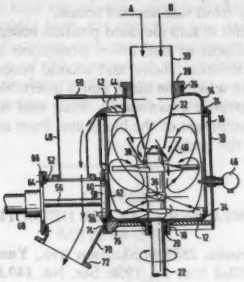
4,357,111

CONTINUOUS MIXING DEVICE AND PROCESS

Rolf Honemeyer, Herford, and Wolfgang Müller, Lemgo, both of Fed. Rep. of Germany, assignors to MTI-Mischtechnik Industrieanlagen GmbH, Detmold, Fed. Rep. of Germany

Filed Dec. 27, 1979, Ser. No. 107,524
Int. Cl.³ B01F *7/22, 15/02*
U.S. Cl. 366—145 **16 Claims**

1. Device for continuously mixing together at least two different materials with substantially uniform product mixing and heat distribution, said device comprising an essentially cylindrical, vertical mixing vessel having a base, a substantially vertical shaft entering the base of said vessel and extending coaxially therein, a plurality of mixing tools attached to said shaft within said vessel, filling tube means substantially coaxial with the shaft and entering the vessel from the top thereof for supplying fresh materials to be mixed, outlet means for discharging finished mixed product from said vessel located on said vessel near the top thereof, funnel means substantially coaxially surrounding the lower end of said filling tube and providing a gap thereinbetween, and deflector means located in or near said outlet means to split the mixed product into a first portion discharged from the device via said outlet means



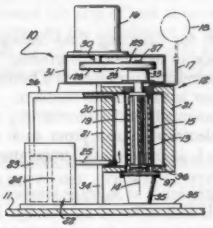
and a second portion introduced through said funnel into said fresh materials.

4,357,112

BEATER

William L. Davis, 880 E. First St. South, Salt Lake City, Utah 84102

Filed Dec. 18, 1980, Ser. No. 217,584
Int. Cl.³ B01F *7/00, 15/06*
U.S. Cl. 366—279 **16 Claims**



1. In apparatus for preparing a beaten product including a chamber into which the ingredients of said product are introduced, a motor, and a bearer assembly within the chamber driven rotatively by said motor, an improved beater assembly comprising:
a rotor body driven by said motor rotatively about an essentially vertical axis and having a generally vertically extending portion and vertically spaced upper and lower portions projecting laterally therefrom; and
at least one blade unit detachably connectable between said upper and lower portions of the rotor body and including a generally vertically extending structure and angularly disposed blade means projecting outwardly therefrom toward a side wall of said chamber to beat the ingredients as the assembly turns;
said upper portion of the rotor body having a first recess facing downwardly, and said lower portion of the rotor body having a second recess facing upwardly;
said blade unit having an upper projection adapted to extend upwardly into and be retained within said upper recess in a predetermined connected position of the blade unit in which it is carried and supported by the body, and having a lower projection adapted to extend downwardly into and be retained within said second recess in said connected position of the blade unit;
said body and said blade unit and said projections and recesses being constructed and dimensioned to enable movement of the blade unit upwardly and downwardly be-

tween said connected position and an elevated position in which said upper projection remains in said first recess but said lower projection is above the level of and withdrawn upwardly from said second recess;

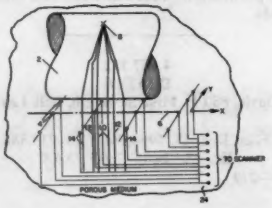
said blade unit in said elevated position being free for swinging movement of said lower projection horizontally between a location above said second recess and an offset position in which the blade unit is insertable upwardly into and removable downwardly from said upper recess for rapid detachment of the blade unit from and rapid attachment to, the body.

4,357,113

LIQUID CONTAINER LEAKAGE DETECTION METHOD AND SYSTEM

Wahner E. Brooks, 2855 S. Madison Ave., Yuma, Ariz. 85364

Filed May 14, 1980, Ser. No. 149,802
Int. Cl.³ G01N *25/72*; G01M *3/18*
U.S. Cl. 374—4 **4 Claims**



1. A system for detecting fluid leakage from a container located in a porous medium, comprising:

an array of thermistors arranged in a horizontal plane beneath said container in said porous medium;

means for sequentially and intermittently scanning said array to detect electrical signals from each of said thermistors indicative of an individual temperature of each of said thermistors;

means for determining an average temperature from said electrical signals indicative of an average temperature of said horizontal plane; means for comparing each of said individual temperatures of each of said thermistors represented by said electrical signals to said average temperature of said horizontal plane to detect the existence of a substantial temperature deviation indicated by one or more of said thermistors from said average;

means for comparing said temperature deviations to determine differential temperatures between two or more adjacent thermistors;

means for determining a temperature gradient from said differential temperatures whereby a position of said leak is determined from a maximum temperature deviation indicated by said temperature gradient; and

means for generating a signal to activate an alarm when said leak is detected.

4,357,114

TEMPERATURE SENSOR

Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Limited, Kariya, Japan

Filed Aug. 29, 1980, Ser. No. 182,813
Int. Cl.³ G01K *7/38*
U.S. Cl. 374—176 **3 Claims**

1. A temperature sensor comprising:

a casing having first and second portions;

said first portion of said casing being exposed to an object at a temperature which is to be sensed;

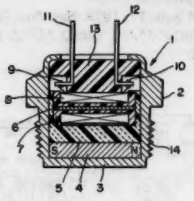
a permanent magnet having magnetic field strength which changes in response to a temperature change, said magnet disposed within said first portion for sensing the temperature of the object;

a core of magnetically soft material disposed within said second portion;

an electrical coil disposed about said core;

an insulator interposed betwen said first and second portions of said casing for thermally isolating said core in said portion from said magnet in said first portion;

said permanent magnet and said core forming a magnetic path;



means for detecting the temperature of said object, comprising,

means for applying a pulse voltage to a first terminal of said coil to saturate magnetically said core, and

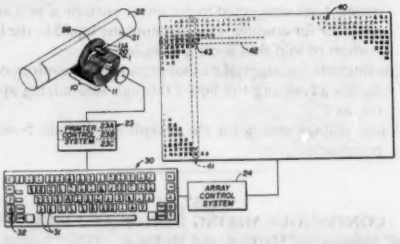
means coupled to a second terminal of said coil for producing a temperature output signal indicative of the temperature of said object based on the time between application of said pulse voltage and saturation of said core.

4,357,115

PRINTING SYSTEM FOR MULTIPLE CHARACTER LANGUAGES AND ELEMENTS THEREOF

Michael C. P. Or, 619 Linden Ave. #5, South San Francisco, Calif. 94080

Continuation-in-part of Ser. No. 408, Jan. 2, 1979, abandoned. This application Oct. 9, 1980, Ser. No. 195,696
Int. Cl.³ B41J *1/30*
U.S. Cl. 400—110 **46 Claims**



1. A printing system comprising:

print receiving means;

a packet of printing elements each having a generally flat edge and an axis of rotation proximate said flat edge, said printing elements being generally coaxially disposed and mutually aligned adjacent the print receiving means so that the flat edge of each of the printing elements is generaly disposed toward the print receiving means, each printing element having a plurality of character faces circumferentially disposed relative to its axis of rotation;

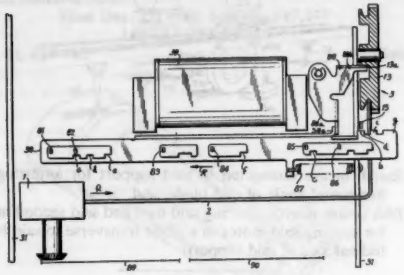
means for axially translating the printing elements to place a selected printing element in a pre-selected pre-print position; and

means for rotating the selected printing element to juxtapose a selected character face toward the print receiving means in print position for printing of said character face.

4,357,116
PRINTER CONTROL ASSEMBLY

Yuhei Oguchi, Shiojiri, Japan, assignor to Shinshu Seiki Kabushiki Kaisha, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Dec. 23, 1980, Ser. No. 219,541
Int. Cl.³ B41J *23/34*
U.S. Cl. 400—184 33 Claims



1. A printer adapted for printing on a recording medium comprising frame means, printing means slidably mounted on said frame means for reciprocal displacement across said recording medium and drive means mounted on said frame means for laterally displacing said printing means across said recording means, first lever means supported by said frame means for controlling the actuation of said drive means, said first lever means being normally engaged with said drive means to enable said drive means to displace said printing means, paper feeding means for advancing said recording medium past said printing means, second lever means supported by said frame means for controlling the actuation of said paper feeding means, said second lever means being normally engaged with said paper feeding means so that said paper feeding means is not actuated, selecting means supported by said frame means so as to be operatively coupleable with said first and second lever means, displacement means driven by said drive means for selectively transversely displacing said selecting means along a path with respect to said first and second lever means, and a single electromagnet for selectively pivoting said selecting means with respect to said first and second lever means at positions along the path of transverse displacement of said selecting means to operably couple said selecting means to said first and second lever means for selective actuation of said drive means and said printing means.

4,357,117
NIB HOLDER CONSTRUCTION FOR WRITING IMPLEMENTS

Masahiko Nagai, Tokyo, Japan, assignor to Ogawa Chemical Industries, Ltd., Tokyo, Japan

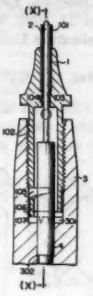
Filed Feb. 29, 1980, Ser. No. 125,916
Claims priority, application Japan, Nov. 8, 1979, 54-155553[U]
Int. Cl.³ B43K *5/16, 21/08;* A45D *40/04*
U.S. Cl. 401—68 4 Claims

1. In a writing implement having a cylindrical casing including an ink storing body, an ink passage having a rigid fixed absorbent ink conducting core therein, and a thin nib, a nib holder comprising:

a holder body having two ends and a passage in said holder body, said passage in said holder body extending between said ends, said passage in said holder body adapted to receive said nib;

at least one nib holding projection in said passage in said holder body, said at least one nib holding projection extending into said passage in said holder body by a distance sufficient that, when a nib is in said passage in said holder body, said nib is of sufficient rigidity to be moved yet held without substantial deformation by said at least one nib holding projection such that relative movement between said nib and nib holder is permitted; and

means on at least one of said cylindrical casing and one end of said holder body for engaging said one end with said cylindrical casing, said means for engagement permitting adjustment of the position of said holder body with respect to the length of said cylindrical casing, said means for engagement being of such a length in the direction of

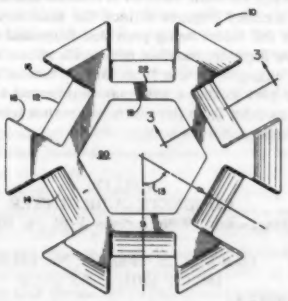


adjustment so as to provide secure engagement between said cylindrical casing and said holder body in at least two adjustment positions; wherein said nib contacts said fixed ink conducting core when said holder body is engaged with said cylindrical casing and said core is sufficiently rigid to overcome the grip of said at least one projection on said nib, whereby the adjustment of said holder body can cause said nib to move relative to said holder body due to said core overcoming the grip of said at least one projection.

4,357,118
CONNECTING ASSEMBLY FOR GEODESIC DOME FRAMEWORK CONSTRUCTION

John R. Murray, 12142 E. 214th St., Hawaiian Gardens, Calif. 90716

Filed Mar. 2, 1981, Ser. No. 239,617
Int. Cl.³ F16D *1/00, 3/00*
U.S. Cl. 403—172 9 Claims



1. A connecting assembly for joining the the framework of a geodesic dome comprising:

(a) a hub, having at least three grooves, said grooves having two flat substantially parallel sides and a flat bottom substantially perpendicular to said flat substantially parallel sides, said grooves facing radially outward from the center of said hub, said hub having a hollow center with flat

internal lands in said hollow center, said flat internal lands being substantially parallel to said flat bottom of said groove,

(b) a U-shaped connecting member having two parallel sides and a flat bottom piece.

4,357,119

FURNITURE FITTING

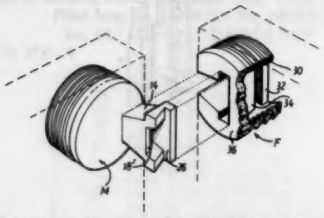
Thomas B. Pollitt, Southport, England, assignor to Newage Kitchens Limited, Liverpool, England

Filed May 21, 1980, Ser. No. 151,928

Claims priority, application United Kingdom, May 22, 1979, 7917720

Int. Cl.³ B25G *3/00*

U.S. Cl. 403—231 **17 Claims**



1. A furniture fitting for releasably securing together respective parts of a piece of furniture required to be held at a predetermined angular position in relation to one another, the fitting being one of two components namely, a female component comprising a socket and means adapted to be let into a furniture part so that no portion of the component projects substantially from any of the surfaces of the furniture part and so that the socket is accessible from a surface thereof, and a male component having a male member and means adapted to be let into the other of the furniture parts to secure the male component to that part with the male member projecting from a surface thereof; the socket of the female component and the male member of the male component being such that the male member can be entered into the socket axially thereof but to connect with said means thereof laterally of the socket; the female component being formed with a resilient member and the male member of the male component with a recess into which, when the male member is entered into the socket, said resilient member engages to lock the male member in place; access to the recess being provided from said surface of the respective furniture member to provide access to the resilient member engaged therein from said surface of the respective furniture part so that a tool may be inserted to dislodge the resilient member from the recess and permit withdrawal of the male member from the socket.

4,357,120

CONCRETE CURB CUTTER

Ian B. MacDonald, 9980 Indiana Unit 14, Riverside, Calif. 92503

Filed Mar. 25, 1980, Ser. No. 133,690

Int. Cl.³ E01C *23/09, 19/50*

U.S. Cl. 404—83 **2 Claims**

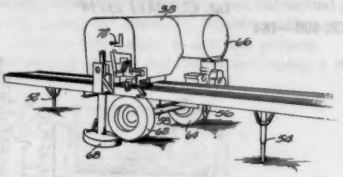
1. A concrete curb cutter comprising:

a motor mounted on a base supplying power to a concrete cutting blade and means operatively associated with said curb cutter for moving said blade to a predetermined cutting position including:

first means connected to said base for moving said base and blade along a longitudinal axis of a support comprising a trolley moveable along a track mounted on said support;

second means for adjusting the vertical height of said blade, said second means interconnecting said blade and said motor;

third means connecting said second means to one of a plurality of positions with respect to said base for adjusting vertical angle of said blade shaft;



fourth means connected to said support for adjusting the horizontal angle of said blade; and

fifth means interconnecting said base and said second means for moving said motor in a plane transverse to said longitudinal axis of said support.

4,357,121

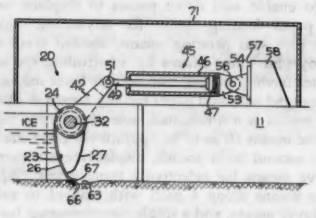
FLAP-GATE FOR BOTTOM DISCHARGE CONTROL IN CANALS HAVING ICE PROBLEMS

Helmut H. Wirschal, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 3, 1980, Ser. No. 203,536

Int. Cl.³ E02B *7/42*

U.S. Cl. 405—100 **5 Claims**



1. A bottom discharge control flap-gate for canals troubled by ice problems wherein said canal comprises a canal bottom, a first sidewall and a second sidewall cooperating to direct a flow of water from a reservoir with said water flowing with said canal between said sidewalls at a water level above said canal bottom with a layer of water at said level susceptible to freezing; the improvements comprising:

a. a water control gate having a body portion mounted within said canal between said sidewalls; said body portion being rotatable about an axis of rotation generally coplanar with said layer of water susceptible to freezing; a face member secured to said body portion and extending therefrom to said canal bottom and extending between said sidewalls; said body portion and face member cooperating to define an arcuate upstream surface with that portion of said surface within said layer of water susceptible to freezing arcing about said axis of rotation with a constant radius of arc; and,

b. means for pivoting said water control gate about said axis of rotation with said face portion moving away from said reservoir and away from said canal bottom;

whereby said water control gate interrupts the flow of water through said canal when said gate is positioned with said face member extending from said body portion to said canal bottom and said gate permits flow of water through said canal when said gate is pivoted with said face member away from said reservoir with water flowing beneath said gate with said upstream surface and ice having reduced resistance to movement

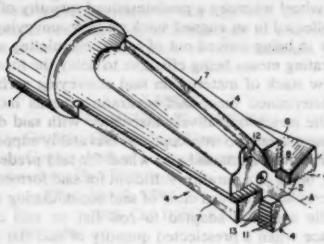
due to said arcuate shape of said upstream surface within said layer.

4,357,122

INSERTED BLADE END MILL

Thomas Hollis, Jr., Peterborough, and Harold F. Armstrong, Milford, both of N.H., assignors to The O.K. Tool Company, Inc., Milford, N.H.

Filed Dec. 17, 1980, Ser. No. 217,247
Int. Cl.³ B26D 1/12
U.S. Cl. 407—42 3 Claims



1. An inserted blade end mill comprising:

a cylindrical shank of a diameter between approximately one half and three inches;

a cylindrical cutter-holding body of approximately the same diameter as the shank extending axially from the shank, the body having a plurality of cutter sockets with opposed walls tapered lengthwise toward the shank; and

a tapered cutter blade slidingly received in each shank socket and having two faces engaging the socket walls;

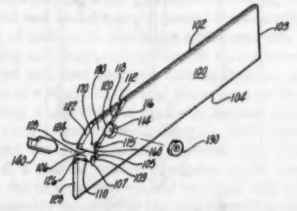
wherein both blade faces have longitudinal serrations and both opposed socket walls have longitudinal serrations interfitting with the blade serrations, the serrations on both the blade and the socket walls running in parallel planes whereby the blades may by slidingly received and wedged in the sockets in the direction of the serrations, the interengagement of serrations at both blade faces preventing rotation of the blade in its socket.

4,357,123

INSERT RETENTION APPARATUS

Raymond T. Zweekly, Royal Oak, Mich., assignor to The Valeron Corporation, Troy, Mich.

Filed Aug. 28, 1980, Ser. No. 182,224
Int. Cl.³ B26D 1/00
U.S. Cl. 407—110 9 Claims



1. Apparatus for retaining a cutting tool insert with a cutting edge in operative position for engaging a workpiece, the apparatus comprising:

a support blade having two lateral surfaces spaced apart a distance at least as narrow as the length of the retained insert's cutting edge, a first aperture with upper and lower surfaces shaped for receipt of mating upper and lower surfaces of the cutting insert, a second aperture having first and second opposed surfaces, the second aperture positioned to provide a flexible but unitary portion of support blade material bounded by the first and second apertures, an opening extending between the two lateral surfaces and intersecting one of the first and second surfaces of the second aperture; and

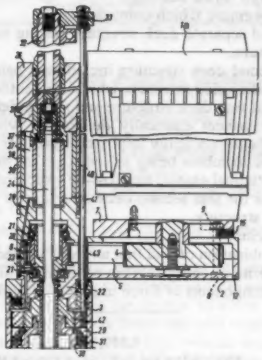
actuating means having substantially the same thickness as the distance between the two lateral surfaces and shaped for substantially permanent mating location in the opening, operative in either of two rotative directions to bear against that surface of the second aperture opposite the intersection with the opening to move oppositely facing portions of the upper and lower surfaces of the first aperture toward one another.

4,357,124

POWER FEED ROTARY TOOL

Christopher J. Dudden, Boscombe, and Peter J. Blomfield, Flitwick, both of England, assignors to Desoutter Limited, London, England

Filed Jul. 7, 1980, Ser. No. 166,616
Int. Cl.³ B23B 47/22
U.S. Cl. 408—130 6 Claims



1. A power feed rotary tool having a working head and an electric motor with an output shaft for rotating the working head, a pneumatic system for feeding the working head towards a workpiece, an elongate housing with the working head at one end thereof, a drive train within the housing for rotating the working head, a piston within the housing for feeding the working head as it rotates towards the workpiece, a control rod at the other end of the housing, means for restraining said control rod from rotating with respect to said housing and connecting said control rod to the drive train so that said control rod is fed together with the working head, the control rod including an abutment for limiting the feeding of the working head, means for drivingly connecting said electric motor to said drive train between the ends of said housing comprising a toothed drive belt, a toothed driving pulley on the motor output shaft and a toothed driven pulley in the drive train, and drive belt being operatively connected to said pulleys, and a device for tensioning said drive belt comprising an adjustable motor mount for mounting said motor on said housing, means on said device for engaging said housing to retain said device in fixed position relative to said housing means, including a threaded member on said device for engaging said adjustable motor mount, said threaded member being rotatable to move said drivingly pulley away from said driven pulley, a compression spring operatively associated with said threaded member, and means for preventing rotation of the threaded member when a predetermined degree of compression of the spring has been reached to provide the correct tension in said drive belt.

4,357,125
RAILWAY INGOT MOLD CAR

Charles C. Gerding, and Stephen M. Rechtorik, both of Pittsburgh, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Aug. 28, 1980, Ser. No. 182,246
Int. Cl.³ B60P 3/00; B61D 3/16; B61F 1/14
U.S. Cl. 410—44 3 Claims

1. In a buggy for transporting ingot molds, which buggy includes:

truck frame structure which carries the wheels and bolster assemblies of the buggy, for

a first deck structure superimposed on said frame structure and joined thereto by means of king pins extending through thrust bearings,

the improvement which comprises:

a second separate deck structure resting on said first deck structure,

said second deck structure including a pair of longitudinal extending side members which are cantilevered outboard of said first deck structure and which define loading support surfaces elastically deflectable when subjected to significant vertically imposed impact forces,

said side members being joined together near ends of their longitudinal extents by cross-tie structures which provide means for said second deck structure to rest on said first deck structure,

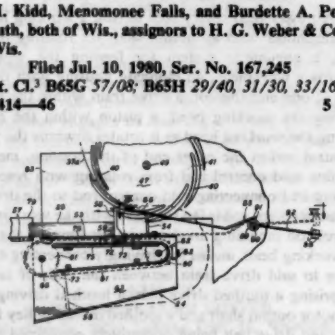
and wherein:

the combination of said first and said second deck structures comprise an energy absorbing device which absorbs vertical components of force imposed on said side members.

4,357,126
INFEED COUNTING CONVEYOR

Arthur H. Kidd, Menomonee Falls, and Burdette A. Petersen, Plymouth, both of Wis., assignors to H. G. Weber & Co., Inc., Kiel, Wis.

Filed Jul. 10, 1980, Ser. No. 167,245
Int. Cl.³ B65G 57/08; B65H 29/40, 31/30, 33/16
U.S. Cl. 414—46 5 Claims



1. An automatic infeed conveyor for forming generally flat pieces of material into vertically aligned stacks of a predetermind quantity comprising:

a star wheel having a plurality of peripheral slots therein with each slot arranged to receive an individual piece of said material from a delivery source;

a star wheel drive means arranged too rotatably drive said star wheel at a constant, predetermined speed;

a flight conveyor positioned adjacent said star wheel including a conveying surface having an accumulating area upon which a stack of material is formed and having counting flight means to automatically move a formed stack of material out of said accumulating area after a predetermined quantity of said material has been formed into said stack;

a decelerating stop means positioned in said accumulating area to intercept, decelerate and strip said individual pieces of said material from said star wheel slots for depositing said material on said conveying surface to accommodate the formation of said aligned stacks in said accumulating area;

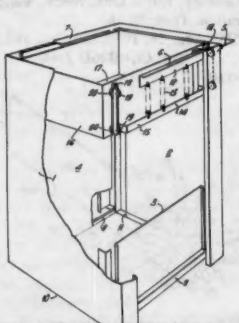
a synchronized drive means being arranged to drive said counting flight means along said conveying surface at a speed proportional to said predetermined speed of said star wheel whereby a predetermined quantity of material is collected in an aligned stack on said conveying surface prior to being moved out of said accumulating area, and

a separating means being effective to delay the formation of a new stack of material on said conveying surface for a predetermined time, said separating means including a paddle means operatively associated with said decelerating stop means to intercept and elevatably support material received from said star wheel for said predetermined time, being of a duration sufficient for said formed stack of material to be moved clear of said accumulating area, said paddle means is adapted to rest flat on said conveyor surface when a preselected quantity of said flat pieces of material have been stripped from said star wheel and deposited on top of said paddle means during the formation of an aligned stack and adapted to assume a raised position remote from said conveying surface when less than said pre-selected quantity of said flat pieces of material have been stripped from said star wheel and deposited on top of said paddle means, said separating means further includes a counterbalance weight means being effective to control the movement of said paddle means relative to said conveying surface in response to the quantity of flat pieces of material deposited on top of said paddle means.

4,357,127
APPARATUS FOR THE STACKING OF OBJECTS

Pieter L. Kooiman, Hendrik Ido Ambacht, Netherlands, assignor to Avedko, B.V., Dordrecht, Netherlands

Filed Apr. 17, 1980, Ser. No. 140,991
Claims priority, application Netherlands, Oct. 17, 1978, 7810423
Int. Cl.³ B65H 31/14
U.S. Cl. 414—99 3 Claims



1. An apparatus for the stacking of objects, in which the uppermost one of the objects in the stack is always maintained at the same height, in which there is provided a vertically-arranged open-topped container provided with a frame supported by a number of posts, and in which the carrier for the stack of objects is suspended from the said frame with the aid

of tension springs exterior of said carrier and positioned along at least two sides thereof and wherein the said carrier is in the form of an open-topped box, the bottom of which forms the supporting surface thereof and the upper edges of the side-walls of which lie substantially in the same plane as that of the surface of the said frame, said supporting surface of the said carrier being located at a considerable distance below the surface of the said frame when the carrier is in the unloaded condition, said distance being at least equal to the length of the tension springs in the unloaded condition, said carrier being provided at a location exterior of said carrier and proximate each end of two opposing side-walls with a vertically arranged member having a cross section of "W" form, the inner flange of said member being affixed to said side-wall, the two adjacent outer flanges each carrying at least a pair of wheels that coact with the inner sides of the posts of said container.

4,357,128

CONVEYING SYSTEM

Eldon D. Gooden, Chesterfield County, and James P. Reed, Henrico County, both of Va., assignors to Mactavish Machine Manufacturing Co., Richmond, Va.

Filed Jun. 2, 1980, Ser. No. 155,223
Int. Cl.[3] B65G *25/02*
U.S. Cl. 414—156 8 Claims

1. A lift and lay conveyor comprising

a pair of stationary, mutually spaced rails, the upper surfaces thereof defining article support surfaces contained in a common horizontal plane, said rails extending from an article pick-up point into an article treatment chamber;

a pair of stationary, mutually spaced tracks disposed between said rails and extending from the article pick-up point to the article treatment chamber;

a conveyor truck having a plurality of wheels mounted on said tracks for horizontal movement therealong between said rails, said truck having a horizontal bed with an upper support surface and a lower carriage mounting said wheels;

means coupled between said truck carriage and bed for raising and lowering said upper support surface vertically relative to said carriage between a first position wherein said surface is contained in a horizontal plane disposed below the rail support surface and a second position wherein said surface is contained in a horizontal plane disposed above said rail support surface, said means for raising and lowering comprising a plurality of inflatable bags mounted between and interconnecting said carriage and said bed and mutually spaced horizontally along the length of said truck; means for simultaneously inflating or deflating said bags; and stabilizing means interconnecting said bed and said carriage for maintaining said support surface in a single horizontal plane; said stabilizing means including a plurality of mutually spaced linkage assemblies, each assembly comprising: a shaft carried by said bed and extending laterally across the lower portion thereof; a pair of spaced elongated lever arms disposed below the support surface and on either side thereof, each arm rotatably mounted at one end thereof at an end of said shaft, each arm extending therefrom at an angle to the horizontal, each arm rotatably mounted at an opposite end thereof to a side of said carriage; a pair of slotted links rotatably and slidably mounted on said shaft at either end thereof, said slotted links extending downwardly therefrom at an angle to the horizontal; a pair of mounting pins rotatably and slidably extending through the slots in said links and interconnecting said links and said carriage;

drive means coupled to said carriage for driving said truck along said tracks to displace said truck horizontally between the article pick-up point and the article treatment chamber;

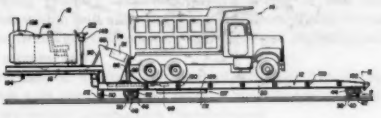
control means coupled between said drive means and said means for raising and lowering said truck support surface for selectively actuating horizontal movement of said truck and vertical movement of said truck bed relative to said carriage whereby articles may be individually conveyed by said truck from the pick-up point and deposited on said rails until a predetermined number are accumulated, and subsequently conveyed by said truck, into the chamber and deposited on the rails therein.

4,357,129

SELF-PROPELLED BALLAST DISPENSING MACHINE

Dale Luttig, Rte. 1, Emmett, Kans. 66422

Filed Aug. 13, 1980, Ser. No. 177,952
Int. Cl.[3] B65G *67/02;* E01B *27/04;* B61F *13/00*
U.S. Cl. 414—346 14 Claims



12. A self-propelled ballast dispensing machine comprising:

a frame;

a pair of wheels adjacent each end of said frame adapted for mobility on a pair of tracks;

a hopper means at a first end of said frame for receiving and dispensing ballast onto a track bed;

means at said first end for connecting said frame to a fifth wheel of a truck tractor;

means at a second end of said frame for receiving a pair of wheels for off-track travel;

vertical means at said first end adjacent the outlet of said hopper means vertically movable relative to said frame for raising said frame above the ground to allow connection and disconnection of said frame and said truck tractor;

horizontal means connected to said vertical means and extend transverse thereto for spreading dispensed ballast when said vertical means lowers said horizontal means to said pair of tracks;

said frame being sufficiently long to carry a land vehicle on said frame for supplying ballast to said hopper means; and

drive means on said frame for propelling said machine on a pair of tracks.

4,357,130

WIND COLLECTION APPARATUS

William J. Forrest, 3400 NW. Expressway, Oklahoma City, Okla. 73112

Continuation-in-part of Ser. No. 835,184, Sep. 21, 1977, Pat. No. 4,204,795. This application Mar. 19, 1980, Ser. No. 131,663
Int. Cl.[3] F03D *3/06*
U.S. Cl. 416—197 A 15 Claims

1. A wind collecting apparatus comprising:

a shaft, having opposite ends;

a first support post disposed near one end of the shaft;

means journally connecting one end of the shaft to the first support post;

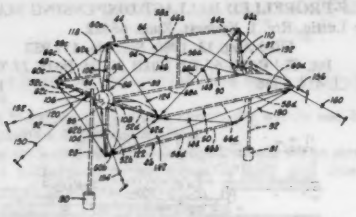
a second support post disposed near the end of the shaft, opposite the end of the shaft journally connected to the first support post;

means journally connecting one end of the shaft to the second support post, the shaft extending between the first and the second support posts and being journally supported for rotation about an axis of rotation;

at least two blade frames, each blade frame having a first end, a second end, a first side and a second side, the second side of each blade frame being connected to the shaft and

each blade frame extending generally radially from the shaft terminating with the first side, the first end of each blade frame being disposed generally near one end of the shaft and the second end of each blade frame being disposed generally near the opposite end of the shaft;

a frame transverse cable assembly having a portion connected to the first side of one of the blade frames generally near the first end and connected to the first side of one of the other blade frames generally near the second end and another portion connected to the second side of one of the blade frame generally near the second end and connected to the first side of one of the other blade frames generally near the second end;



a frame end cable assembly having a portion connected to the first end of one of the blade frames generally near the first side and connected to the first end of one of the other blade frames generally near the first side;

a base transverse cable assembly having a portion connected to one end portion of the shaft and extending to and being connected to the first side of each blade frame and extending and being connected to the opposite end portion of the shaft; and

a base end cable assembly having portions connected to the shaft and to the first end of each blade frame and having portions connected to the shaft and to the second end of each blade frame.

4,357,131

DETECTOR FOR CONTROLLING THE OPERATION OF A SUCTION PUMP

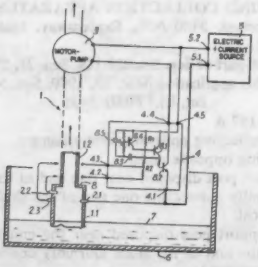
Gilbert Guillemot, 7, rue de la Liberation, 95650 Courcelles-sur-Viosne, France

Filed Jun. 27, 1980, Ser. No. 163,522

Claims priority, application France, Jul. 4, 1979, 79 17318

Int. Cl.³ F04B *49/06*

U.S. Cl. 417—12 **9 Claims**



1. In apparatus for pumping liquid from a tank, the apparatus comprising a suction pump having a suction pipe extending into the tank and a control circuit for controlling the operation of the pump, a detector connected to the control circuit and arranged to control the operation of the pump in dependence upon the level of liquid within the tank, the detector comprising an elongate member of insulating material connected to the free end of the suction pipe and extending below an upper level for liquid in the tank, said member being spaced in the transverse direction outwardly of the suction pipe to thereby define a peripheral zone between the suction pipe and said member, and at least first and second spaced electrodes mounted on said member so as to extend inwardly of said member, at least the first electrode not extending beyond said peripheral zone.

5. A detector according to claim 1, wherein said control circuit includes a time delay means arranged to delay for a predetermined time the restarting of the pump after a stoppage.

4,357,132

HERMETIC SCROLL FLUID DISCHARGE APPARATUS WITH PRESSURIZED FLUID PASSAGE IN WRAP

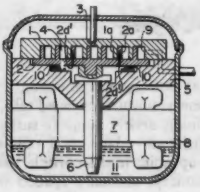
Hirokatu Kousokabe, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 97,693

Claims priority, application Japan, Dec. 1, 1978, 53/164669[U]

Int. Cl.³ F04C *18/02, 27/00*

U.S. Cl. 418—55 **3 Claims**



1. A hermetic scroll fluid discharge apparatus comprising:

a. a fixed scroll member including an end platte and a wrap means arranged in vortical form, said wrap means extending perpendicularly to said end plate to have a predetermined height and provided with a mirror-like surface at the forward end thereof;

b. an orbiting scroll member including an end plate and a wrap means arranged in vortical form reversed in pattern from the vortical form of said wrap means of said fixed scroll member, said fixed scroll member and said orbiting scroll member being in engagement with each other in such a manner that the mirror-like surface of the wrap means of the fixed scroll member is in sliding contact with the end plate of the orbiting scroll member and the mirror-like surface of the wrap means of the orbiting scroll member is in sliding contact with the end plate of the fixed scroll member, to define fluid pockets between the end plates and wrap means of the fixed and orbiting scroll members;

c. a hermetic container containing at least said two scroll members in airtight relation;

d. means for supplying fluid from outside the hermetic container to the fluid pockets;

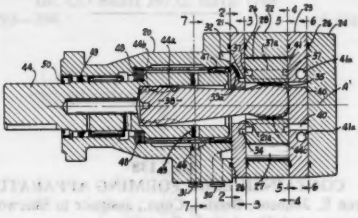
e. means for discharging fluid from said fluid pockets to the outside of said hermetic container; and

f. means for driving said orbiting scroll member to move in orbiting movement; wherein the improvement comprises communication means opening at one end in said fluid pockets and at the other end in said hermetic container, said one end of said communication means being formed at least in one portion thereof in the wrap means of one of the fixed scroll member and the orbiting scroll member to permit pressurized fluid to be introduced from the fluid pockets to the hermetic container.

4,357,133
ROTARY GEROTOR HYDRAULIC DEVICE WITH FLUID CONTROL PASSAGEWAYS THROUGH THE ROTOR

Hollis N. White, Jr., 707 Tamiami Trail, West Lafayette, Ind. 47906

Continuation of Ser. No. 910,075, May 26, 1978, abandoned.
This application Jan. 18, 1980, Ser. No. 113,400
Int. Cl.³ F03C 2/08; F04C 2/10, 15/02
U.S. Cl. 418—61 B 49 Claims

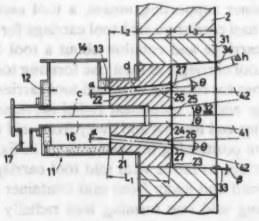


1. In a gerotor hydraulic pressure device having a housing, a rotor with two flat axial end surfaces, gerotor cells and two fluid connections, an improved fluid control comprising a pair of travel passageways, one of said pair of travel passageways extending on a straight line through the rotor from one surface to the other, the other of said pair of travel passageways being in the rotor, means to connect one of said pair of travel passageways to one of the fluid connections, means to connect the other of said pair of travel passageways to the other of the fluid connections and means within the housing to connect said pair of travel passageways to the gerotor cells selectively as the device is operated.

4,357,134
FUEL COMBUSTION METHOD AND BURNER FOR FURNACE USE

Matsuzaki Katsushige, Kisarazu; Narazaki Seiji, Kimitsu, and Kawaguchi Masanori, Kisarazu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 54,570, Jul. 3, 1979, abandoned.
Filed Jun. 15, 1981, Ser. No. 274,053
Claims priority, application Japan, Jul. 11, 1978, 53-83607
Int. Cl.³ F23M 3/00
U.S. Cl. 431—9 4 Claims



1. A method of burning fuel in a furnace having a furnace wall including a burner tile with a port therethrough, and a burner including a baffle extending into an outer portion of said port, said baffle not extending into an inner portion of said port, a fuel injection port extending through said baffle along a central axis of said burner and opening into said inner portion of said port, and a plurality of air injection ports extending through said baffle at positions circumferentially spaced about said fuel injection port and opening into said inner portion of said port, said method comprising:

injecting fuel through said fuel injection port in a fuel stream along said central axis through said inner portion of said port of said burner tile and into the interior of said furnace;

simultaneously injecting combustion air through said plurality of air injection ports in respective air streams diverging outwardly from said central axis through said inner portion of said port of said burner tile and into said interior of said furnace;

maintaining said air streams substantially out of contact with each other, with said fuel stream and with said burner tile during passage thereof through said inner portion of said port of said burner tile;

developing a reduced pressure within said inner portion of said port of said burner tile by injection therethrough of said fuel and air streams, drawing spent gas from said interior of said furnace into said inner portion of said port of said burner tile along the periphery thereof by means of said reduced pressure, and enclosing said fuel and air streams within said inner portion of said port of said burner tile with said spent gas;

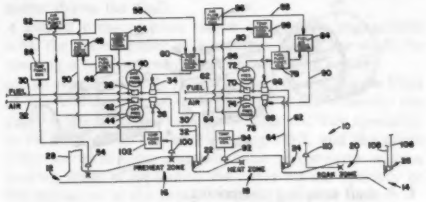
performing primary combustion of said fuel in said fuel stream within said inner portion of said port of said burner tile with oxygen contained in said spent gas enclosing said fuel stream; and

bringing said air streams into contact with said fuel stream within said interior of said furnace, and thereat performing secondary combustion therebetween.

4,357,135
METHOD AND SYSTEM FOR CONTROLLING MULTI-ZONE REHEATING FURNACES

James D. Wilde, Bay Village, and Rolland L. Hoffman, Brecksville, both of Ohio, assignors to North American Mfg. Company, Cleveland, Ohio

Filed Jun. 5, 1981, Ser. No. 271,037
Int. Cl.³ F27D 3/00
U.S. Cl. 432—11 10 Claims



1. A method of controlling a fuel fired reheat furnace having input and discharge ends, a preheat zone near said input end, a heat zone between said preheat zone and said discharge end, fuel burner means in each said preheat and heat zones and exhaust gas fuel means between said input end and said preheat zone, said method comprising measuring the fuel flow rate for heating said heat zone as a function of a given throughput rate for said furnace, establishing an exhaust gas temperature corresponding to said flow rate as a further function for said given throughput rate, and controlling heating of said preheat zone to obtain said established exhaust gas temperature.

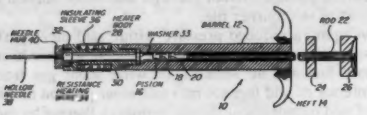
4,357,136
METHOD FOR FILLING A ROOT CANAL

Sheldon B. Herskovitz, Acton; Jay Marlin, Leominster, and Martin R. Stiglitz, Lexington, all of Mass., assignors to Solar Energy Technology, Inc., Bedford, Mass.

Division of Ser. No. 831,714, Sep. 9, 1977, Pat. No. 4,265,618.
This application May 4, 1981, Ser. No. 260,038
Int. Cl.³ A61C 5/02
U.S. Cl. 433—224 1 Claim

1. A method filling dental root canal cavities with thermoplastic material comprising the steps of:

providing a dental syringe having a chamber for holding a supply of thermoplastic material, a tubular needle, having a length of at least about one inch and an outer diameter within the range of diameters from that of an 18 gauge needle to that of a 30 gauge needle, fabricated from a material having high thermal conductivity of at least about 200 Btu/(hr.) (ft.^{2})(°F./ft.), an electric heater for heating the thermoplastic material and a plunger for pushing softened thermoplastic material through the needle;



by means of the syringe heater, heating thermoplastic material within the syringe chamber and heating the needle to temperatures sufficient to soften the thermoplastic material and allow it to flow through the needle;

positioning the needle in a dental cavity;

pushing softened thermoplastic material through the needle into the dental cavity and thereby filling the cavity; and

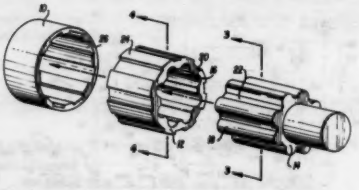
permitting the thermoplastic material within the dental cavity to cool and become a hardened mass.

4,357,137

SHAFT COUPLING

Harry W. Brown, Annapolis, Md., assignor to Arinc Research Corporation, Annapolis, Md.

Filed Aug. 18, 1980, Ser. No. 179,006
Int. Cl.^{3} F16D *3/52*
U.S. Cl. 464—75 **9 Claims**



1. A shaft coupling comprising:

a metallic female member;

a substantially tubular plastic insert substantially non-rotatably secured to said female member;

a metallic male member slip fitted in said insert;

said insert being substantially ring-shaped in transverse cross-section and having an inner surface and an outer surface, said inner surface being defined by at least six equally circumferentially spaced radially outwardly extending substantially straight longitudinally extending recesses part-circular in transverse cross-section, said recesses extending radially outwardly a substantially uniform distance for their entire length, the centers of curvature of said recesses being located on a first imaginary circle about the transverse cross-sectional center of said insert, each recess extending no closer to the cross-sectional center of the insert than the imaginary circle;

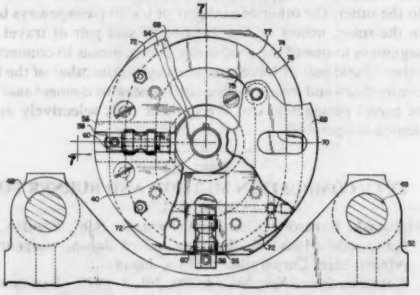
said male member being substantially cylindrical and comprising a plurality of radially outwardly extending equally circumferentially spaced substantially straight longitudinally extending projections part-circular in transverse cross-section, said projections extending radially outwardly a substantially uniform distance for their entire length, said projections corresponding exactly in number and substantially in situation to the recesses in said insert, the centers of curvature of said projections being located on a second imaginary circle, about the transverse cross-sectional center of the male member having the same diameter as the first circle, each projection being no closer to the transverse cross-sectional center of the male member than the second circle.

4,357,138

CONTAINER EDGE FORMING APPARATUS

Warren E. Johnson, Bristol, Conn., assignor to Sherwood Tool, Incorporated, Kensington, Conn.

Filed Jul. 16, 1980, Ser. No. 167,641
Int. Cl.^{3} B31B *43/00*
U.S. Cl. 493—159 **13 Claims**



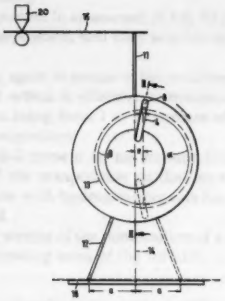
1. Apparatus for forming a non-circular edge of a cup-shaped container, said apparatus comprising means for supporting a container, a movable tool carriage, means supporting said tool carriage for movement generally toward and away from said container supporting means, a tool carrier, means supporting said tool carrier on said tool carriage for movement with said tool carriage and rotation about a tool carrier axis relative to said tool carriage, at least one forming tool mounted on said tool carrier for rotation with said tool carrier relative to said tool carriage and for rectilinear radial movement relative to said tool carrier and toward and away from said tool carrier axis, first positive positioning means mounted in fixed position on said tool carriage to move with said tool carriage and said tool carrier toward and away from said container supporting means for moving said one forming tool radially outwardly relative to said tool carrier axis, second positive positioning means mounted in fixed position on said tool carriage to move with said tool carriage and said tool carrier toward and away from said container supporting means for moving said one forming tool radially inwardly relative to said tool carrier axis, said first and second positive positioning means coacting to move said one forming tool along a definite predetermined noncircular path around said tool carrier axis in response to rotation of said tool carrier about said tool carrier axis, and means for moving said tool carriage toward and away from said container supporting means to move said forming tool into and out of working engagement with an edge of a container supported by said supporting means.

4,357,139

APPARATUS FOR DEPOSITING SECTIONS WELDED OFF FROM A WEB OF FILM

Richard Feldkämper; Fritz Achelpohl, both of Lengerich, and Aloys Winnemöller, Rheine, all of Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,224
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928251
Int. Cl.³ B65H *29/32*; B31B *1/98*
U.S. Cl. 493—204 5 Claims



1. Apparatus for transferring severed sections from a transverse welding and transverse severing means to a support, said apparatus comprising:

first and second suction tube means having outer ends for suction attracting a severed section;

a shaft supporting inner ends of said suction tube means so that outer ends of said first and said second suction tube means are spaced from each other by an obtuse angle (α) slightly less than 180°;

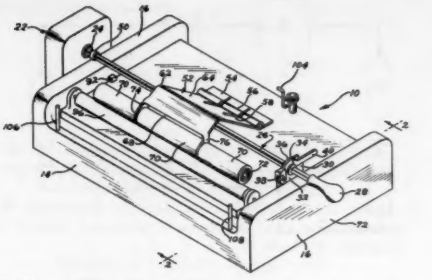
means for rotating said shaft so that said first and said second suction tube means are alternately moved between a vertically extending orientation for engaging a section to be transferred and a deposit position for depositing a transferred section on the support, said means for rotating alternately rotating said shaft through the obtuse angle (α) and the explement (β) thereof.

4,357,140

ELECTRIC NEWSPAPER LOG ROLLER MACHINE

Curtis D. Phillips, Rte. One Box 125, Richland, Ind. 47634; Larry R. Davis, 3704 Longview Rd., Louisville, Ky. 40299, and Kenneth E. Phillips, Rte. One, Newburg, Ind. 47630

Filed Oct. 23, 1980, Ser. No. 200,005
Int. Cl.³ B31C *1/00*
U.S. Cl. 493—307 10 Claims



1. An apparatus for forming paper logs from sheets of paper comprising:

a. a work surface;

b. motor means stationarily mounted with respect to the work surface;

c. a removable elongated shaft connected at one end to and turned by said motor means, said shaft means extending transversely across said work surface, a quick-releasable shaft-bearing member mounted on the work surface at a location remote from said motor means for supporting the other end of the shaft therein;

d. and means for attaching one edge of a wide sheet of paper to the said shaft for winding the paper onto the shaft as the motor drives the shaft;

e. a hinged pressure plate means biased into engagement with the rolled paper at a location above the shaft for creating a tension force on the paper being rolled;

f. and an elongated guide roller positioned adjacent the front of the work surface and below the shaft, whereby the paper is fed under the said guide roller and then upwardly to be attached to the said winding shaft, and the guide roller serves to apply a tension force on the paper when a braking force is applied to the paper by the operator of this apparatus as the paper is wound onto the shaft.

4,357,141

COMPOSITIONS FOR DYEING HAIR AND THEIR APPLICATIONS

Jean-Francois Grollier, Paris; Christian Monnais, Neuilly-sur-Seine, and Lyonel Peritz, Boulogne-sur-Seine, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 940,040, Sep. 6, 1978, abandoned. This application May 6, 1980, Ser. No. 147,330

Claims priority, application France, Sep. 7, 1977, 77 27096; Jun. 15, 1978, 78 17900

Int. Cl.³ D06P *3/04*

U.S. Cl. 8—406 **21 Claims**

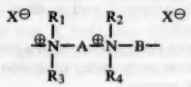
1. A hair dyeing composition which comprises an oxidation dye in an amount effective to dye said hair and a vehicle, said vehicle comprising

a fatty acid present in an amount of 5 to 30 percent by weight of said composition, said fatty acid having 12 to 20 carbon atoms;

an alkalizing agent in excess of the stoichiometric amount of said agent which is effective to neutralize the fatty acid, said excess being from 1 to 30 percent of the total weight of said composition;

benzyl alcohol present in an amount from 2 to 20% by weight of the composition so that an admixture of said composition with hydrogen peroxide has a creamy consistency; and

1 to 15% by weight of the composition of a cationic polymer having repeating units of the formula



wherein

each of R_1, R_2, R_3 and R_4 is identical and is alkyl of 1 to 3 carbon atoms; or wherein R_1 is identical to R_2, R_3 is identical to R_4, and R_2 is different from R_3, then each of R_1 and R_2 is alkyl of 1 to 3 carbon atoms and each of R_3 and R_4 is hydroxyalkyl containing 1 to 3 carbon atoms;

each of A and B is linear or branched alkylene or linear or branched alkenylene of 2 to 20 carbon atoms; $-(CH_2)_n-O-(CH_2)_n-$; $-(CH_2)_m-NH-CO-NH-(CH_2)_m-$; $-CH_2CHOH-CH_2-$ or $-CH_2C_6H_4-CH_2-$; n and m are whole numbers, each of n and m being equal to 2 or 3; and X is an anion.

4,357,142

GLASS SUPPORT COATED WITH SYNTHETIC POLYMER FOR BIOPROCESS

Roy F. Schall, Jr., and Stephen J. Lewis, both of Glendora, Calif., assignors to Akzona Incorporated, Asheville, N.C.

Filed Jul. 18, 1980, Ser. No. 170,304

Int. Cl.³ G01N *33/50, 33/54, 33/78, 33/58*

U.S. Cl. 23—230 B **15 Claims**

7. Bioprocess using a device containing at least one functional biomaterial, the improvement wherein the device comprises:

(a) transparent glass solid support means insoluble in a solvent selected from the group consisting of water and organic solvent solutions, which solid support means is coated with organic-solvent based synthetic polymeric film means; and

(b) one or more functional biomaterials adsorbed or covalently bonded to said polymeric films.

4,357,143

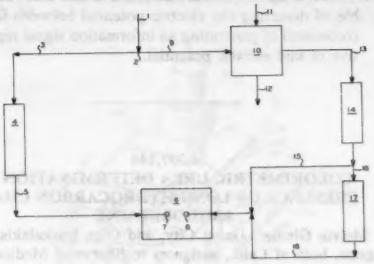
DETERMINING ION CONCENTRATION

Richard L. Scott, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 75,392, Sep. 14, 1979, abandoned. This application Oct. 17, 1980, Ser. No. 197,875

Int. Cl.³ G01N *27/46*

U.S. Cl. 23—230 R **36 Claims**



29. Method for measuring the concentration of desired ions in a solution, said solution containing first feed ions of a first charge in an initial concentration, second feed ions of a second charge opposite to the first charge in an equivalent concentration and containing among the first feed ions the desired ions to be measured, said method comprising,

(a) generating a reference stream from said solution containing only such ions in one charge to which a reference electrode is sensitive, and containing these ions in a concentration equivalent to said initial concentration,

(b) passing this reference stream into contact with said reference electrode,

(c) generating a measurement stream from said solution,

(d) converting the desired ions of said measurement stream to a non-ionic product and leaving an intermediate measurement stream having an ion concentration equivalent to the difference of the initial ion concentration minus the concentration of said desired ions and deriving a final measurement stream from the intermediate measurement stream such that the final measurement stream contains only such ions of one charge to which a measurement electrode is sensitive,

(e) passing the final measurement stream derived from the intermediate measurement stream of step (d) and containing only such ions of one charge to which a measurement electrode is sensitive and containing these ions in a concentration equivalent to the initial ion concentration minus the concentration of said desired ions, into contact with said measurement electrode, and

(f) determining the relative electrical potential between the measurement electrode and the reference electrode.

36. Apparatus for measuring the ion concentration of a desired ion in a solution comprising

(a) means defining a source of said solution,

(b) first means to convert at least a first portion of said solution into a reference stream containing only such ions of one charge in a concentration equivalent to the initial concentration of said solution, to which ions a reference electrode is sensitive,

(c) second means for converting a second portion of said solution into a final measurement stream containing only such ions of the same charge as the charge mentioned in (b) to which ions a measurement electrode is sensitive, in a concentration equivalent to said initial concentration minus the concentration of said desired ions, said second means comprising non-ionic product generating means for converting said desired ions into a non-ionic product,

(d) conduit means connecting said source of said solution to said first and said second means,

(e) a measurement electrode sensitive to the specific ions of (c)
(f) a reference electrode sensitive to the specific ions of (b)
(g) measurement conduit means connecting said first means with said reference electrode,
(h) reference conduit means connecting said second means with said measurement electrode,
(i) potential detector means attached to said electrodes capable of detecting the electric potential between said electrodes and of generating an information signal representative of said electric potential.

4,357,144

COLORIMETRIC UREA DETERMINATION IN PRESENCE OF LONG HYDROCARBON CHAIN AMIDOBETAINE

E. Melvin Gindler, Union City, and Olga Daskalakis, Burlingame, both of Calif., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Aug. 14, 1981, Ser. No. 292,959
Int. Cl.³ G01N *33/52, 33/62*
U.S. Cl. 23—230 B **16 Claims**

1. A method of demonstrating the presence of urea in a liquid sample, said method comprising the step of mixing said sample with a reagent comprising o-phthalaldehyde, a chromogenic compound selected from the group consisting of chromotropic acid and its salts, and a long hydrocarbon chain amidobetaine to produce a colored reaction product.

4,357,145

CARBONACEOUS PELLETS AND METHOD OF MAKING

Michael A. Dondelewski, 5354 Fortress Trail, Columbus, Ohio 43230

Filed Mar. 27, 1981, Ser. No. 248,488
Int. Cl.³ C10L *5/14*
U.S. Cl. 44—20 **4 Claims**

1. A process for forming pellets from fine carbonaceous material comprising the steps for:
(a) forming a water slurry of the material;
(b) mixing the slurry with a binder comprising a tall oil binder selected from the group consisting of tall oil, tall oil pitch, and mixtures thereof;
(c) separating the material from excess water and binder;
(d) forming pellets from said material; and
(e) heating said pellets in the presence of air at a temperature for a time long enough to fuse the carbonaceous materials and the tall oil binder.

4,357,146

SYNTHETIC FUEL FOR INTERNAL COMBUSTION ENGINE

James K. Heeren, 93 Valley View Dr., Wethersfield, Conn. 06109

Filed Mar. 12, 1980, Ser. No. 129,583
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—56 **7 Claims**

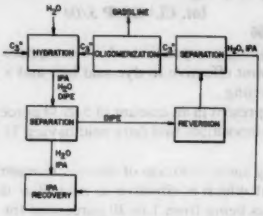
1. A relatively safe automobile fuel composition consisting of an aromatic hydrocarbon selected from the group consisting of benzene and toluene, and at least one C_1 and C_5 alcohol, said aromatic hydrocarbon and alcohol being present in a volumetric ratio of about 1:4 to 4:1.

4,357,147

DIISOPROPYL ETHER REVERSION AND OLIGOMERIZATION IN ISOPROPANOL PRODUCTION

Susan A. Bezman, Point Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 30, 1981, Ser. No. 316,576
Int. Cl.³ C10L *1/02*
U.S. Cl. 44—56 **9 Claims**



1. A process for producing an oxygenated fuel blending composition comprising:
(a) contacting water and a feedstock comprising propylene with a catalyst comprising an acid ion exchange resin in a first reaction zone under hydration conditions to produce a first stream;
(b) dividing the first stream into a second stream comprising water and isopropanol and a third stream comprising diisopropyl ether;
(c) contacting the third stream with a reversion catalyst in a second reaction zone under reversion conditions to produce a fourth stream;
(d) separating propylene from the fourth stream;
(e) oligomerizing the propylene; and
(f) recovering isopropanol from the second stream and blending it with a gasoline blending hydrocarbon stream.

4,357,148

METHOD AND FUEL COMPOSITION FOR CONTROL OR REVERSAL OF OCTANE REQUIREMENT INCREASE AND FOR IMPROVED FUEL ECONOMY

Leonard B. Graiff, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 13, 1981, Ser. No. 253,344
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—62 **11 Claims**

1. A method for operating a spark ignition internal combustion engine which comprises introducing with the combustion intake charge to said engine an octane-requirement-increase inhibiting amount of (a) an oil soluble aliphatic polyamine, containing at least one olefinic polymer chain, and having a molecular weight in the range from about 600 to about 10,000 and attached to nitrogen and/or carbon atoms of the alkylene radicals connecting the amino nitrogen atoms, and at a concentration of 0.2–1.5 ppm basic nitrogen content based upon the fuel component of said intake charge; and (b) a polymeric component which is (i) a polymer of a C_2 to C_6 monoolefin, (ii) a copolymer of a C_2 to C_6 monoolefin, (iii) the corresponding hydrogenated polymer or copolymer, and (iiii) mixtures of at least two (i), (ii) and (iii), said polymeric component having a number average molecular weight in the range from about 500 to 1500, and at a concentration of 250–1200 ppmw based upon the fuel component of said intake charge.

4,357,149

HYDROCARBON-SOLUBLE OXIDIZED, SULFURIZED POLYAMINE-MOLBDENUM COMPOSITIONS AND GASOLINE CONTAINING SAME

C. Thomas West, and Robert J. Basalay, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 25, 1980, Ser. No. 190,590
Int. Cl.³ C10L 1/30
U.S. Cl. 44—68 23 Claims

1. A hydrocarbon-soluble and molybdenum-containing composition which comprises the reaction product of:

(a) a hydrocarbon-soluble polyamine derivative selected from the group consisting of Mannich products and dicarboxylic acid-polyamine reaction products;

(b) a molybdenum compound, wherein the amount of said molybdenum compound is from about 0.5 to 10 moles per mole of polyamine in the polyamine derivative;

(c) a sulfur or sulfur-yielding compound wherein the amount of said sulfur or sulfur-yielding compound is from about 0.1 to 20 moles per mole of polyamine derivative; and

(d) an oxidizing agent.

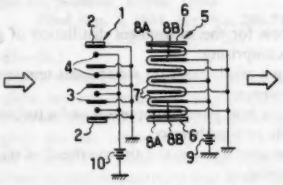
23. A gasoline composition comprising an amount of the composition of claim 1 which is sufficient to supply about 0.1 to 10,000 parts of molybdenum per 1 million parts of gasoline.

4,357,150

HIGH-EFFICIENCY ELECTROSTATIC AIR FILTER DEVICE

Senichi Masuda, Tokyo, and Naoki Sugita, Kawaguchi, both of Japan, assignors to Midori Anzen Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1981, Ser. No. 231,603
Claims priority, application Japan, Jun. 5, 1980, 55-76021
Int. Cl.³ B03C 3/00
U.S. Cl. 55—6 6 Claims



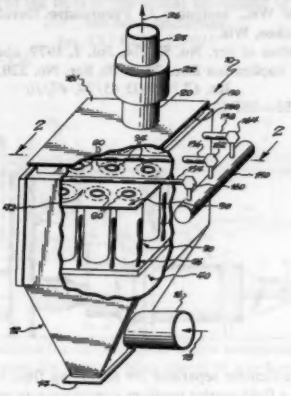
1. In a high efficiency filtration method of electrostatically removing particles suspended within a gas by electrically charging the particles in the gas and then electrostatically filtering the charged particles from the gas with an electrostatic filter having a filter medium and an electrostatic field provided by electrodes upstream and downstream of the filter medium, the improvement wherein the electrostatic filtration of the charged particles from the gas comprises the successive steps of conducting the gas through a high voltage electrostatic field of at least one kilovolt between opposed spaced upstream and downstream electrodes by first conducting the gas between opposed spaced upstream surfaces of the filter medium and upstream electrode to slow down the suspended charged particles within the gas with the electrostatic field between the opposed spaced upstream and downstream electrodes and thereby enhance collection of the particles on at least one of said opposed upstream surfaces, then conducting the gas through the filter medium between said opposed surface of the upstream electrode and an opposed surface of the downstream electrode spaced from an opposed downstream surface of the filter medium to further slow down the suspended charged particles within the gas with the electrostatic field and thereby enhance collection of the particles within the filter medium, and then conducting the gas between said opposed downstream surfaces of the downstream electrode and filter medium.

4,357,151

ELECTROSTATICALLY AUGMENTED CARTRIDGE TYPE DUST COLLECTOR AND METHOD

Dennis J. Helfritch, and Edward J. Gonas, both of Charlotte, N.C., assignors to American Precision Industries Inc., Buffalo, N.Y.

Filed Feb. 25, 1981, Ser. No. 238,081
Int. Cl.³ B03C 3/80; B01D 46/04
U.S. Cl. 55—6 35 Claims



1. Apparatus for separating particulate matter from a gas stream comprising:

(a) a housing having an inlet for receiving dirty gas and an outlet;

(b) a plurality of filter elements in said housing, each of said filter elements being elongated and hollow, closed at one end and open at the other, each of said filter elements having a body portion between said ends, said body portion comprising an outer shell of electrically conducting material having openings therein permitting passage therethrough of said gas and particulate material and an inner filter medium of foraminous dielectric material;

(c) means for holding and positioning said filter elements in spaced relation in said housing with said outer shell and said filter medium being in fluid communication with said housing inlet and with said open end of said filter element being in fluid communication with said housing outlet so as to allow the flow of gas from the interior of said housing through said outer shell and then through said filter medium of each of said filter elements and then axially within and out through said open end of each of said filter elements into said housing outlet; and

(d) means for providing a zone of corona discharge at a location in the path of gas flow between said housing inlet and each of said filter elements so as to cause said gas and particulate mater to flow through said zone prior to passing through said filter elements.

34. A method of separating particulate matter from a gas stream utilizing a filter comprising an elongated, hollow element closed at one end and open at the other and having a body between said ends comprising an outer shell of electrically conducting material having openings therein permitting passage therethrough of said gas and particulate material and an inner filter medium of foraminous dielectric material, comprising the steps of:

(a) providing a corona discharge between corona electrodes and the outer shell of said filter;

(b) moving dirty gas first through said corona discharge and then through said filter in a direction from the outside through said shell, through said filter medium and through the interior of said filter;

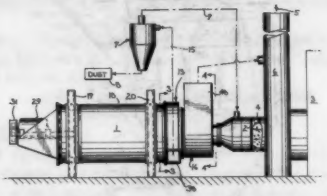
(c) collecting a portion of the particulate matter on said shell of said filter;
(d) collecting the remainder of the particulate matter in said filter medium; and
(e) withdrawing clean gas from said filter.

4,357,152

FLUID BORNE PARTICULATE SEPARATOR

Wilfried P. Duske, Milwaukee, and Lowell C. Frank, Okauchee, both of Wis., assignors to Progressive Development, Inc., Milwaukee, Wis.

Continuation of Ser. No. 53,974, Jul. 2, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,818
Int. Cl.³ B01D *45/14, 47/10*
U.S. Cl. 55—257 C **8 Claims**



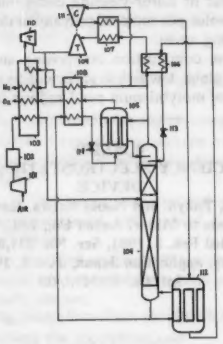
1. A particulate separator for removing fluid borne particulate from a fluid carrier medium, comprising an outer confining housing, an inlet tube means mounted within the housing and adapted to receive the particulate laden fluid carrier medium and having an inner discharge end, said inlet tube means extending into said confining housing and being spaced from the confining housing to define an annular return passageway therebetween having a return inlet adjacent the discharge end and adjacent the outer confining housing, means for establishing flow of said particulate laden fluid carrier medium through said inlet tube means and including means located adjacent the discharge end of the inlet tube means and between the discharge end and the outer housing and constructed and arranged for redirecting the flow of said particulate laden fluid medium about the inner end of the tube means and into said return inlet of said return passageway and imparting a high centrifugal spin to the particulate laden fluid carrier medium as the fluid carrier medium flows from the inlet tube means and into and through the return passageway whereby centrifugal forces act on the particulate to concentrate the particulate within the radially outer portion of the air stream in said return passageway and adjacent said outer confining housing and extended in a reverse direction to the exterior of said inlet tube means, said outer confining housing converging from the return inlet to an outlet means substantially axially spaced from said return inlet whereby said return passageway is substantially elongated to establish a significant resident time of the particulate laden fluid carrier medium in the return passageway, said inlet tube means comprises a continuous inner wall from the return inlet to said outlet means whereby the fluid medium moves with a substantially spiral motion along the confining housing with an increased velocity, said return passageway being essentially a clear unobstructed axial passageway from said return inlet to said outlet means permitting the free spiral flow therethrough with essentially undisturbed separation of flow materials within said return passageway and with essentially the only radial force acting on said particulate being said centrifugal forces created by said centrifugal flow, said outlet means includes a separation wall means located between said inlet tube means and said housing so as to provide parallel inlet and outlet passageways from said clear unobstructed return passageway for separating an inner radial portion of the fluid from an outer radial portion of the fluid, said wall means being arranged and constructed whereby said outer radial portion is substantially radially narrower than said inner radial portion, first discharge means coupled between the separation wall means and said housing for discharging the radially outer portion of the fluid stream, and second discharge means located between the separation wall means and the inlet tube means for discharging the radially inner portion of the fluid stream.

4,357,153

INTERNALLY HEAT PUMPED SINGLE PRESSURE DISTILLATIVE SEPARATIONS

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Mar. 30, 1981, Ser. No. 248,884
Int. Cl.³ B01D *3/14*
U.S. Cl. 62—34 **14 Claims**



1. In a process for the subambient distillation of gases, the improvement comprising:
(a) providing a single pressure subambient temperature distillation column;
(b) providing a heat pump compressor and a turbine providing the sole power thereto;
(c) feeding at least a portion of the overhead of said column to said turbine;
(d) compressing a stream obtained from said column in said compressor sufficient to condense against boiling column bottom product, so as to provide substantially all the reboiler energy and reflux requirements of said column by indirect exchange of latent heat;
(e) returning said stream to said column after said exchange of latent heat.

4,357,154

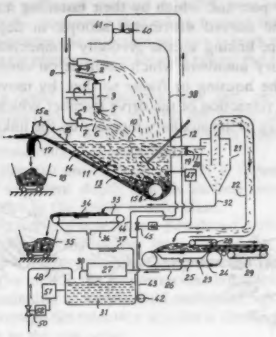
METHOD AND APPARATUS FOR COLLECTING AND HANDLING MINERAL FIBRES

Willy Hartung, Skövde, Sweden, assignor to Rockwool Aktiebolaget, Sweden

Filed Feb. 18, 1981, Ser. No. 235,605
Claims priority, application Sweden, Feb. 22, 1980, 8001396
Int. Cl.³ C03B *37/05*
U.S. Cl. 65—8 **18 Claims**

1. Method of collecting mineral fibres formed by a partial fibrating of a mineral bloom and containing both mineral fibres and un-fibrated particles and lumps of heavier material, which comprises supplying said partially fibrated material upon formation to a water bath by means of one or more flows of fluid which at least partly comprises water, said flow or flows of fluid directly introducing and dispersing the partially fibrated

material in said water bath, allowing the un-fibrated particles to sink to the bottom of said bath while maintaining fibrated



material in suspension and removing a fraction from said bath practically completely containing fibrated material.

4,357,155

SINGLE-COLLET, DUAL-PACKAGE WINDER WITH SELF-THREADING REAR SECONDARY STRAND GUIDE

Scott O. Sheeler, Newark, Ohio; Howard B. Bush, and Peter N. Kiproff, both of Jackson, Tenn., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 2, 1981, Ser. No. 298,715
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—10.1 **5 Claims**

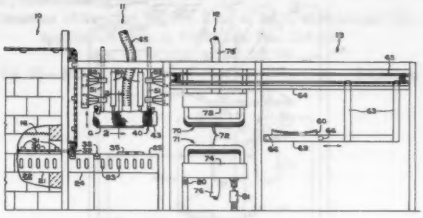
1. Strand forming and packaging apparatus comprising a molten glass stream feeder, a single-collet, dual-package winder disposed below the feeder for attenuating two sets of molten glass streams respectively from two halves of the feeder into two sets of glass fibers and winding the fibers as front and rear strands respectively into front and rear packages on the collet, primary shoe means disposed between the winder and the feeder for gathering the two sets of glass fibers from the two halves of the feeder respectively into a pair of strands, secondary shoe means disposed between the winder and the primary shoe means and including front secondary shoe means and rear secondary shoe means for orienting the pair of strands from the primary shoe means as the front and rear strands, auxiliary pulling means disposed between the winder and the secondary shoe means and transversely of the collet for temporarily pulling the pair of strands from the primary shoe means and maintaining integrity of the fibers at the feeder while an operator removes completed front and rear packages from the collet and installs front and rear empty paper tubes thereon for the winding of a successive set of front and rear packages, and cam and hook means including cam means extending between the front secondary shoe means and the rear secondary shoe means and a hook on the cam means, whereby when the operator removes the strands from the pulling means and operatively engages them with a front end portion of the collet, only the rear strand is entrapped by the hook, and when the operator moves the strands into operative engagement respectively with the front and rear empty paper tubes on the collet and threads the front strand into the front secondary shoe means, the rear strand is automatically threaded into the rear secondary shoe means by transverse movement along the hook and cam means effected by tension in the strand from the winding thereof on the rear paper tube.

4,357,156

MINIMIZING SURFACE DISTORTION WHILE SHAPING GLASS SHEETS

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 44,425, Jun. 1, 1979, Pat. No. 4,233,049, which is a continuation-in-part of Ser. No. 960,404, Nov. 13, 1978, abandoned. This application Jul. 21, 1980, Ser. No. 170,357
The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.
Int. Cl.³ C03B *23/025*
U.S. Cl. 65—104 **10 Claims**



1. An apparatus for shaping glass sheets comprising:
furnace means for heating glass sheets to a softened condition;
support means adjacent to said furnace means for supporting glass sheets;
conveyor means for transferring glass sheets from said furnace means to said support means;
a platen having a perforated plate and having an enclosed interior space in communication with a source of vacuum;
a soft, fluffy, porous, fiber glass fabric cloth;
means for maintaining said cloth against said perforated plate to mask imperfections thereon;
means for transferring said platen into and out of close proximity to said support means so as to lift a glass sheet from said support means by means of vacuum;
a shaping mold having outwardly facing shaping surfaces defining the desired curvature and corresponding to the shape of the glass sheets; and
shuttle means for alternately bringing said platen and said shaping mold into and out of superimposed vertically spaced relationship to each other, wherein said shaping mold in the superimposed position is supported at an elevation below said platen so as to receive and shape a glass sheet dropped from said platen.

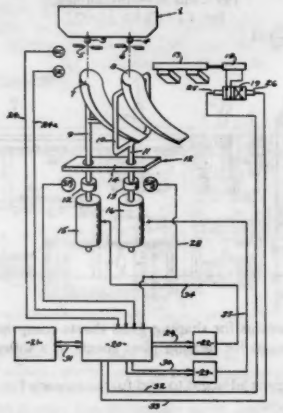
7. A method of shaping glass sheets, comprising the steps of:
heating a glass sheet within furnace means to approximately its softening point and bringing the glass sheet to rest on support means adjacent to the furnace means;
translating a vacuum platen having a substantially flat, perforated surface and a soft, fluffy, porous, fiber glass fabric cloth over the perforated surface to mask imperfections thereon, toward the support means to bring the flat, perforated surface into close proximity to, and parallel with, a surface of the glass sheet;
drawing vacuum through the flat, perforated surface and cloth so as to retain the glass sheet on the platen against the cloth;
translating the platen away from the support means to lift the glass sheet from the support means and to bring the glass sheet into a generally horizontal orientation on the underside of the platen;
bringing into vertical alignment with and beneath the glass sheet held on the platen a shaping mold having a contour defining the desired contour for the glass sheet; and
releasing the glass sheet from the platen so as to fall onto the shaping mold and conform to the contour defined by the shaping mold.

4,357,157

ELECTRONIC GOB DISTRIBUTOR FOR GLASSWARE FORMING MACHINES AND THE LIKE

Luis Cardenas-Franco, and Gustavo A. Sanches-Galindo, both of Monterrey, Mexico, assignors to Investigacion Fic Fideicomiso, Monterrey, Mexico

Filed Mar. 25, 1981, Ser. No. 247,626
Int. Cl.³ C03B 7/20
U.S. Cl. 65—164 19 Claims



1. An electronic gob distributor, for glassware forming machines and machines for forming thermoplastic articles and the like, which comprises in combination: means delivering gobs severed by cutting action from a continuous source; at least one vertical and axially curved distributing channel mounted to a vertical rotatable shaft, the top end of the channel being open for gob reception from said means and maintained in the same axial position independent of the shaft rotation; means for synchronized movement of the lower end of the channel into a plurality of positions and each of which conveys the gobs to one of a plurality of forming stations of the machine; a step motor coupled to the rotary shaft of each distributing channel for said rotation of said shaft to position the lower end of the channel in alignment with a forming station; a step motor controller which actuates a pulse source; a pulse amplifier for each channel to amplify the pulses of the controller and feed them to the respective step motor; and a computer means programmed to sequence the controller for said synchronized movement of the lower end of the channel into said plurality of positions with respect to said plurality of forming stations.

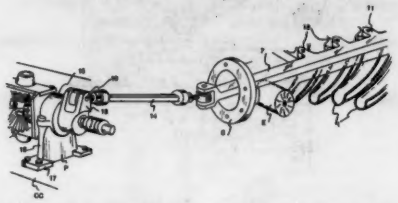
4,357,158

GOB DISTRIBUTOR FOR THE SHAPING OF ARTICLES OF GLASS AND OTHER MATERIALS

Elio M. Garza, Monterrey, Mexico, assignor to Investigacion FIC Fideicomiso, Monterrey, Mexico

Filed Aug. 28, 1981, Ser. No. 297,522
Claims priority, application Mexico, Aug. 30, 1980, 184561
Int. Cl.³ C03B 5/32
U.S. Cl. 65—225 10 Claims

1. A gob distributor for machines for the shaping of articles of glass or other materials, comprising: a curved distributing scoop for each of the gobs which are supplied simultaneously by the distributor, each of which scoop has its upper end aligned at all times with each respective orifice of the doser and is moved angularly so that its lower end coincides, in a predetermined order, with the ends of the fixed channels of the machine which lead the gobs to the respective cavities of the individual sections of the machine; fastening means coupled to the upper end of each scoop; a support frame or housing; a drive member and an auxiliary member which are linked movably to each other and which comprise fastening means on their inner part and which by their fastening means rotatably support the curved distributor scoops, in dependent linear relationship; linking means pivotally connected to the drive and auxiliary members which oscillate on central pivots fastened to the housing or frame so that, by movements of advance and retraction of the drive member which are transmitted inversely to the auxiliary member by the linking means, the



distributing scoops are turned angularly to predetermined delivery positions; a connecting rod articulately coupled at one of its ends to the drive member; and a positioner coupled to the other end of the connecting rod in order to impart the regulated movements of advance and retraction to the connection rod and the drive member in order to turn the curved scoops through an angle to the predetermined delivery position in a programmed sequence and with precise movements between the different sections of the machine.

4,357,159

HALOETHYLTHIENYLSULPHONATES FOR THE REGULATION OF PLANT METABOLISM

Bernhard Gloor, Muttenz, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 867,652, Jan. 6, 1978, Pat. No. 4,149,873.
This application Feb. 1, 1979, Ser. No. 8,623
Int. Cl.³ A01N 43/10
U.S. Cl. 71—90 6 Claims

1. A method for promoting the abscission of fruit which comprises applying to a fruit bearing plant or to a fruit itself an effective amount of a compound of the formula

$$R_1—SO_2—X—CH_2CH_2—Hal$$

wherein

R_1 is thienyl optionally mono- to tri-substituted by one or more members selected from the group consisting of halogen, C_1-C_4 alkyl and trifluoromethyl,

X is oxygen or sulphur, and

Hal is fluorine, chlorine, bromine or iodine.

4,357,160

PROCESS FOR IMPROVING THE USE OF HEAT IN STEEL PRODUCTION FROM SOLID IRON MATERIAL

Ludwig von Bogdandy, Oberhausen-Sterkrade, and Karl Brotzmann, Sulzbach-Rosenberg, both of Fed. Rep. of Germany, assignors to Klöckner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 215,070
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949803
Int. Cl.³ C21C 7/00
U.S. Cl. 75—60 9 Claims

1. A method of heating solid, iron-containing materials in a steel-making converter which includes a floor, a side wall, at least one injection nozzle extending through the side wall in a lower nozzle plane and at least one injection nozzle extending

into the converter in an upper nozzle plane, said method comprising the steps of

(a) introducing a sufficient amount of solid, iron-containing materials into the converter that when formed into a melt bath in the converter the injection nozzles in both the lower and upper nozzle planes will be located below the surface of the bath,

(b) supplying a fluid carbonaceous fuel and oxygen gas through the injection nozzles in both the lower and upper nozzle planes to burn within the converter and thereby preheat the iron-containing materials,

(c) continuing step (b) until a bath of melt is formed in the converter of sufficient depth that its surface contacts the injection nozzles in the lower nozzle plane,

(d) subsequent to step (c), supplying a powdered carbonaceous fuel and oxygen gas through at least one of the injection nozzles in the lower nozzle plane such that the fuel will be injected into the melt in the converter and burn, while at the same time continuing to supply fluid carbonaceous fuels and oxygen gas through the injection nozzles in the upper nozzle plane to burn in the converter,

(e) continuing step (d) until the formed melt bath in the converter has sufficient depth that its surface contacts the injection nozzles in the upper nozzle plane,

(f) subsequent to step (e), supplying exclusively oxygen gas through all of the injection nozzles to help complete the combustion of the fuels supplied to the converter.

4,357,161

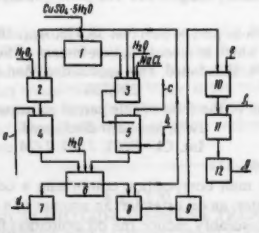
METHOD FOR PROCESSING WASTES RESULTING FROM PRODUCTION OF PHOSPHORUS, NAMELY, SLIME AND OFF-GASES, WITH UTILIZATION OF THE RESULTANT PRODUCTS

Vasily B. Chernogorenko, ulitsa Ezhena Potie, 11, kv. 86, Kiev; Tleubai M. Alzhanov, ulitsa Poltoratskaya, 18a, kv. 4, Chimkent; Kima A. Lynchak, ulitsa Kaunasskaya, 4, kv. 55; Simon V. Muchnik, Yaroslavov val, 17, kv. 12, both of Kiev; Evgeny S. Ishkhanov, ulitsa Dzhangildina, 8, kv. 22; Vladimir Y. Sergienko, ulitsa Cagarina, 84, Sergienko, both of Chimkent; Vladimir G. Sapian, ulitsa Dekabristov, 37, kv. 30, Vasilkov Kievskoi oblasti; Vladimir M. Koverya, ulitsa Bocharova, 8b, kv. 114, Zaporozhie; Mendel E. Pobortsev, ulitsa Vedopyanova, 7, kv. 1, Chimkent; Evgeny A. Markovsky, ulitsa Sewashko, 21, kv. 58, Kiev; Valentina V. Dmitrenko, ulitsa 40 let Sovetskoi Ukrainy, 2, kv. 180, Zaporozhie; Vladimir I. Bykov, ulitsa Zaitseva, 22, kv. 83, Leningrad; Alexandr D. Kipchakvaev, ulitsa Uritskogo, 186, kv. 33, and Alexandr N. Vopilov, ulitsa Uritskogo, 210, kv. 34, both of Chimkent, all of U.S.S.R.

Division of Ser. No. 109,297, Jan. 3, 1980, Pat. No. 4,302,249, which is a division of Ser. No. 898,973, Apr. 21, 1978, Pat. No. 4,192,853. This application Jun. 22, 1981, Ser. No. 275,855

Int. Cl.³ C22C *9/00*

U.S. Cl. 75—153 **1 Claim**



1. A method for utilization of a solid product containing mainly copper phosphide as well as fluorides, chlorides of alkali metals and silicon, silicates of calcium and aluminum produced from the slime and off-gases resulting from the production of phosphorus by way of treatment thereof with an aqueous solution of cuprous sulphate comprising utilization of said product for the manufacture of a copper-phosphorus alloy by way of melting said product in an inert medium at a temperature within the range of from 1,050° to 1,150° C.

4,357,162

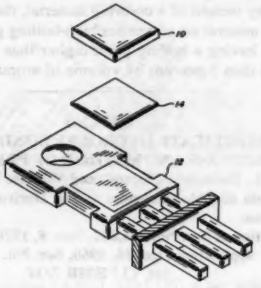
SOLDER COMPOSITION

Der-Yang Guan, Poughkeepsie, N.Y., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 81,702, Oct. 4, 1979, abandoned. This application Dec. 8, 1980, Ser. No. 214,402

Int. Cl.³ C22C *14/00, 13/00*

U.S. Cl. 75—175 R **7 Claims**



1. A solder composition for bonding a semiconductor die to a plated or unplated metal package member comprising, in weight percent, about 5–8 copper, 20–40 silver, 0.5–3.0 selenium, and balance tin.

4,357,163

WATER SOLUBLE PENTACHLOROPHENOL AND TETRACHLOROPHENOL WOOD TREATING SYSTEMS CONTAINING FATTY ACID AMINE OXIDES

Joseph Amundsen, Federal Way; Robert J. Goodwin, Puyallup, and William H. Wetzel, Federal Way, all of Wash., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 176,795, Aug. 11, 1980, Pat. No. 4,288,249, which is a continuation of Ser. No. 14,955, Feb. 26, 1979, abandoned, which is a continuation of Ser. No. 857,035, Dec. 2, 1977, abandoned. This application Aug. 28, 1981, Ser. No. 297,162

Int. Cl.³ C09D *5/14*

U.S. Cl. 106—18.35 **16 Claims**

1. Water soluble wood treating and preserving solutions consisting of blends of (A) from about 0.1% to about 50% by weight of a chlorophenol selected from a group consisting of pentachlorophenol and tetrachlorophenol and mixtures thereof; (B) from about 1% to about 97% by weight of an aliphatic alcohol having from 1 to 6 carbon atoms and mixtures thereof; (C) from about 0.2% to about 35% by weight of a fatty acid amine oxide having from 10 to 32 carbon atoms; (D) from about 0.2% to about 35% by weight of an amine selected from the group consisting of ammonium hydroxide, triethylamine, trimethylamine, methyl amine and methyldiethanol amine and mixtures thereof; and (E) from about 1% to about 97% by weight of water.

4,357,164

INK COMPOSITION FOR WATERLESS LITHOGRAPHY AND METHODS OF PRINTING THEREFROM

Kunio Tsuji, Yono; Toshiaki Tsuji, Urawa; Otugu Hayashi, Saitama, and Tsutomu Hayashi, Tokyo, all of Japan, assignors to Sakata Shokai, Ltd., Osaka, Japan

Filed Dec. 2, 1980, Ser. No. 212,224

Claims priority, application Japan, Dec. 11, 1979, 54/161357; Nov. 21, 1980, 55/164947

Int. Cl.³ C09D *11/08, 11/10*

U.S. Cl. 106—29 13 Claims

1. In an ink composition for waterless lithography consisting essentially of about 15 to about 35 percent by weight of a vehicle resin, said vehicle resin being selected from the group consisting of a rosin-modified phenolic resin, a phenolic resin, an alkyd resin, a rosin ester resin, a petroleum resin, a maleic resin and mixtures thereof, about 5 to about 25 percent by weight of a drying or semi-drying oil, about 15 to about 45 percent by weight of a mineral oil, and about 1 to about 40 percent by weight of a coloring material, the improvement in that said mineral oil comprises high-boiling petroleum solvent mixtures having a boiling point higher than 200° C. and contains less than 5 percent by volume of aromatic components.

4,357,165

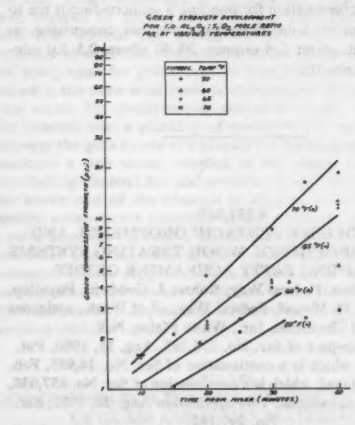
ALUMINOSILICATE HYDROGEL BONDED GRANULAR COMPOSITIONS AND METHOD OF PREPARING SAME

Richard L. Helferich, Clayton, and William B. Shook, Columbus, both of Ohio, assignors to The Duriron Company, Dayton, Ohio

Continuation of Ser. No. 958,802, Nov. 8, 1978, abandoned. This application Dec. 16, 1980, Ser. No. 217,203

Int. Cl.³ B28B *7/34*

U.S. Cl. 106—38.3 27 Claims



1. Formed shapes of refractory material which are composed of a moldable mix that is self-setting without baking at ambient atmospheric conditions, said mix comprising at least 90% by weight of refractory granular particles, and an aluminosilicate hydrogel binder having a mole ratio of alumina to silica of about 0.33 to 2.0 for retaining said particles in said formed shapes, said binder consisting of an alkaline mixture of aqueous solutions containing, respectively, a water soluble source of silica and a water soluble source of alumina, said solutions being combined in said granular mix in proportion to produce said aluminosilicate hydrogel binder under said ambient atmospheric conditions, said aluminosilicate hydrogel producing in said formed shapes a minimum compressive strength of about 12 psi within 60–65 minutes at 50° F. or within 10–12 minutes at 80° F. ambient temperature, 50% humidity, and forming a substantially water-resistant rigid bond between the particles of the mix after molding said mix into said shapes.

4,357,166

METHOD AND COMPOSITION FOR CONTROLLING VOLUME CHANGE IN FAST SETTING, FLUID IMPERMEABLE CEMENTITIOUS SYSTEMS

Warner K. Babcock, Stamford, Conn., assignor to Construction Products Research, Inc., Old Greenwich, Conn.

Filed May 11, 1981, Ser. No. 262,175

Int. Cl.³ C04B *7/02*

U.S. Cl. 106—89 20 Claims

1. A cementitious composition which, when mixed with water, is capable of setting into a hard mass with inhibited wet expansion in the hardened state comprising aluminous cement, gypsum, a drying shrinkage inhibitor and a salt of lithium in an amount effective to act as a wet expansion inhibitor.

4,357,167

METHODS OF STOWING CAVITIES WITH FLOWABLE MATERIALS

William H. Kellet, Coalville, and Peter S. Mills, Burton-on-Trent, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Aug. 25, 1980, Ser. No. 180,565

Claims priority, application United Kingdom, Sep. 7, 1979, 7931203; Nov. 16, 1979, 7939750

Int. Cl.³ C04B *7/02*

U.S. Cl. 106—97 27 Claims

1. A method of stowing or filling a cavity with a flowable cementitious cavity filling medium, comprising filling the cavity with a flowable cavity filling medium wherein the medium comprises, by volume, cement mixture 1–30%, 0.001–5% of at least one clay selected from the group consisting of hectorite, bentonite, smectite and kaolinite clays and water in excess of 65%, the cement mixture comprising Portland Cement and, based on the weight of Portland Cement, 10–75% of a mixture of calcium aluminate and calcium sulphate, 0.5–15% of at least one inorganic salt accelerator and 0.005–3% of an organic or inorganic setting retarder and permitting the medium to harden in situ to form a supportive mass.

4,357,168

CELLULOSIC COMPOSITIONS USEFUL IN PREPARING HOT MELTS

Maurice L. Zweigle, Midland, and Janet C. Hickman, Rhodes, both of Mich., assignors to The Dow Chemical Co., Midland, Mich.

Continuation-in-part of Ser. No. 28,775, Apr. 10, 1979, Pat. No. 4,256,505, which is a continuation-in-part of Ser. No. 926,488, Jul. 20, 1978, abandoned. This application Mar. 2, 1981, Ser. No. 239,728

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.³ C08L *1/10, 1/26*

U.S. Cl. 106—171 21 Claims

1. A hot melt composition comprising a cellulose ether or cellulose ester, an oil extender, an amount of a surfactant sufficient to measurably reduce the oil exudation from a solidified composition of the cellulosic and oil extender or visually improve the compatibility of the components in the solidified composition and an amount of a heat stabilizer sufficient to reduce the discoloration of the hot melt composition upon extended heating at a temperature sufficient to form a liquid solution of the hot melt composition.

4,357,169

UNIFORM ASPHALT PAVEMENT AND PRODUCTION METHOD THEREFORE

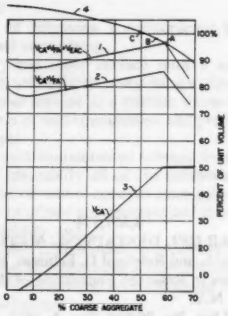
Jose A. Trujillo, Albuquerque, N. Mex., assignor to Riguez Associates, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 23,390, Mar. 23, 1979, Pat. No. 4,221,603, which is a continuation-in-part of Ser. No. 764,336, Jan. 29, 1977, abandoned. This application Feb. 21, 1980, Ser. No. 123,207

The portion of the term of this patent subsequent to Sep. 9, 1997, has been disclaimed.

Int. Cl.³ C08L 95/00

U.S. Cl. 106—281 R 18 Claims



1. An asphalt pavement structure of substantial area having substantially constant volume V_{EA} of air voids under a standard compaction, said pavement comprising asphalt cement and a mixture of a coarse aggregate blending and a fine aggregate blending, the aggregates of said fine aggregate blending being variable in absorption, specific gravity, particle shape, size distribution, or consolidation under said standard compaction, and wherein the proportion of said coarse and fine aggregate blending is below the bulking point of the mixture, said proportion being periodically determined during the production of said pavement by the steps of:

A. demarcating the aggregates to define coarse and fine aggregates,

B. mixing a reference sample including said fine aggregate and a quantity of asphalt cement,

C. compacting said reference sample under said standard compaction,

D. determining an Index quantity that represents the quantity of fine aggregate per unit volume of said reference sample compacted under said standard compaction, and

E. selecting a proportion of coarse and fine aggregates according to said volumetric relationship:

$$V_{CA}+V_{FA}+V_{EA}+V_{EAC}=1 \text{ unit volume}$$

for differing proportions of coarse and fine aggregate, wherein the quantity of fine aggregates per unit of the combined volumes V_{FA} and V_{EAC} substantially equals said Index quantity, where V_{EAC} is the volume effective asphalt cement, V_{CA} is the volume of the coarse aggregate, and V_{FA} is the solid voidless volume of the fine aggregate.

4,357,170

TITANIUM DIOXIDE PIGMENT TREATED TO SUPPRESS YELLOWING IN POLYMERS

John R. Brand, Palmerton, Pa., assignor to The New Jersey Zinc Company, Bethlehem, Pa.

Filed Jul. 30, 1981, Ser. No. 288,650

Int. Cl.³ C09C 1/36

U.S. Cl. 106—300 22 Claims

1. A titanium dioxide pigment for use in polymeric compositions comprising a pyrogenic titanium dioxide pigment which has been treated with an addition system comprising:

(a) an organophosphate/alkanolamine addition product, and

(b) a polyol.

4,357,171

MILL FOR CANE SUGAR AND RELATED USES

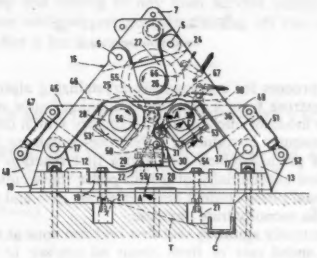
William A. Nurse, 6, Wyncroft Close, St. Georges Rd., Bickley, Kent BR 2 LG, England

Filed Feb. 9, 1981, Ser. No. 232,998

Claims priority, application United Kingdom, Feb. 27, 1980, 8006553

Int. Cl.³ B30B 3/04

U.S. Cl. 127—5 20 Claims



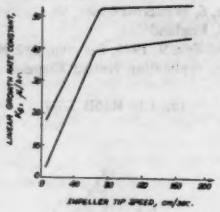
1. A mill comprising a feed roller (25), a top roller (24), and a discharge roller (26), housing means defining a center plane and including two upstanding spaced frames (15, 16) between which said rollers extend, the axes of the rollers being parallel to each other, first bearing means at opposite ends of the top roller (24) and carried respectively by the two upstanding frames, second bearing means at opposite ends of the feed roller (25), first chair means (29) operatively mounted in said housing means and supporting said second bearing means for pivotable movement of said feed roller about a first pivot axis defined by said first chair means, operatively mounted first power operated means coupled to said first chair means for varying the feed opening between the feed roller and the top roller, third bearing means at opposite ends of the discharge roller, second chair means (37) operatively mounted in said housing means and supporting said third bearing means for pivotable movement of said discharge roller about a second pivot axis defined by said second chair means, operatively mounted second power operated means coupled to said second chair means for varying the discharge opening between the discharge roller and the top roller, trash plate means (55) for transferring material between the feed opening and the discharge opening, said trash plate means (55) being disposed between the feed and discharge rollers and being coupled to said first chair means for movement therewith, said first and second pivot axes defined respectively by said first and second chair means being disposed adjacent to said center plane of the mill, said first pivot axis for said feed roller means being disposed on the discharge side of said center plane and in a plane parallel to the center plane and passing through or substantially passing through a heel of said trash plate means (55), the mill being structured such that mill settings are automatically adjusted according to throughput and quality of throughput by constant pressures applied respectively to said feed roller and to said discharge roller by said first and second power operated means and such that the ratio between the feed and discharge openings is maintained substantially constant for all conditions of feed.

4,357,172

PROCESS FOR CONTINUOUS CRYSTALLIZATION OF ALPHA MONOHYDRATE DEXTROSE UTILIZING HIGH AGITATION

Larry W. Edwards, Hillsdale, N.J., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Dec. 17, 1980, Ser. No. 217,484
Int. Cl.³ C13F 1/02
U.S. Cl. 127—60 5 Claims



1. A process for continuously crystallizing alpha monohydrate dextrose from a dextrose containing liquor wherein the primary mode of nucleation is secondary which comprises:

continuously introducing a dextrose-containing feed liquor at a predetermined rate into a first reaction zone comprised substantially of a lean phase massecuite having a crystal phase content between about 15% and about 45% alpha monohydrate dextrose;

continuously agitating said first reaction zone at an impeller tip speed rate of from about 60 cm/sec to about 600 cm/sec, said rate being characterized high enough to promote good mixing of the feed liquor with said lean phase massecuite within said first reaction zone and to assure a linear crystal growth rate which is surface reaction controlled and low enough to avoid excessive attrition of said lean phase massecuite within said first reaction zone;

continuously crystallizing said feed liquor within said first reaction zone to form additional lean phase massecuite, said first reaction zone operating at a constant temperature between about 40° C. and about 50° C., the mean residence time of said feed liquor in said first reaction zone being from about 6 hours to about 30 hours; and

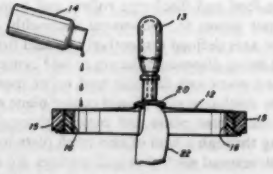
continuously withdrawing lean phase massecuite from said first reaction zone.

4,357,173

LENS CLEANING AND POLISHING METHOD

Perry Rosenthal, Brookline, and Louis Mager, Waltham, both of Mass., assignors to Polymer Technology Corporation, Wilmington, Mass.

Filed Oct. 15, 1980, Ser. No. 197,273
Int. Cl.³ B08B 11/02
U.S. Cl. 134—6 4 Claims



3. A method of cleaning and polishing a contact lens having a convex surface and an opposed concave surface comprising,

holding said concave surface of said lens with a suction gripping holder,

tenting a soft, yieldable cloth stretched substantially flat in a frame by moving said convex surface of said lens into said cloth to tent said cloth,

and rubbing said tented cloth with respect to said convex surface to clean and/or polish said surface.

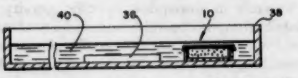
4. A method in accordance with the method of claim 3 wherein said cloth is wet with a cleaning and/or polishing material.

4,357,174

SLAB GEL DESTAINING METHOD

Julie I. Rushbrook, and Reichard D. Feinman, both of Brooklyn, N.Y., assignors to Research Foundation of the State Univ. of NY, Albany, N.Y.

Continuation of Ser. No. 99,834, Dec. 3, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,393
Int. Cl.³ B01D 15/00
U.S. Cl. 134—10 8 Claims



1. A process of destaining stained slab gel comprising the steps of:

(a) providing a destaining apparatus comprising in combination

(i) a hollow housing having a height along its vertical axis equal to or less than its length and width thereby forming relatively short end walls, said end walls being provided with a plurality of apertures;

(ii) stain absorbing material means disposed within said housing;

(iii) means positioned to cover said apertures for preventing said stain absorbing material means from leaving said housing means while permitting destaining liquid to freely flow therethrough and;

(iv) a fluid containing means comprising a base and having a length and width sufficient to contain therein the slab to be destained when said slab is laid flat upon the base thereof, said fluid containing means having a depth sufficient to permit destaining fluid to cover said slab, and further being of sufficient size to contemporaneously accomodate said slab and said housing when said housing is set therein having its vertical axis perpendicular to the base of said fluid containing means;

(b) placing the slab gel to be destained upon the base of said fluid containing means,

(c) providing sufficient destaining fluid to said fluid containing means to cover said slab,

(d) agitating said fluid containing means whereby the destaining fluid is caused to circulate through the stain absorbing material in the housing until all unreacted stain has been removed from said stained slab gel.

4,357,175
PROCESS FOR CLEANING THE INTERIORS OF VESSELS

Chester G. Buffington, Stratford, Conn.; Herbert H. Fang, Yorktown Heights, N.Y.; Barry A. Friedfeld, Shelton, Conn.; Thaddeus J. Kaniecki, Pompton Plains, N.J.; John W. Kennedy, Westport, Conn.; Chong-tan Liu, West Nyack, N.Y.; Morton Sternberg, Old Greenwich; Henry H. Feng, Orange, both of Conn.; Paul Y. Chen, Huntington Beach, Calif.; Waheed Mukaddam, Quincy, Mass., and Pattamadai E. Narasimhan, Bombay, India, assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 139,062, Apr. 10, 1980, abandoned. This application Jul. 8, 1981, Ser. No. 281,455

Int. Cl.³ B08B *7/04*

U.S. Cl. 134—10 **10 Claims**

1. A method of removing a contaminant from the inner surface of a vessel comprising

(a) contacting said inner surface with a solvent for said contaminant, said solvent comprising a chlorinated hydrocarbon, a polar solvent or a mixture thereof, to remove at least a portion of said contaminant and produce a contaminated solvent;

(b) collecting said contaminated solvent from said vessel;

(c) separating essentially all of the contaminant from said contaminated solvent to recover essentially all the solvent essentially free of said contaminant and produce a contaminant composition; and

(d) combining said contaminant composition with a combustible composition comprising a high boiling hydrocarbon.

6. A method of removing a contaminant from the inner surface of a vessel comprising

(a) contacting said inner surface with a solvent for said contaminant, said solvent comprising a chlorinated hydrocarbon, to remove at least a portion of said contaminant and produce a contaminated solvent;

(b) collecting said contaminated solvent from said vessel;

(c) distilling said contaminated solvent to produce an overhead product containing essentially all of said chlorinated hydrocarbon, and bottoms product;

(d) incinerating said bottoms product;

(e) washing said overhead product with sulfuric acid to remove remaining contaminant from the chlorinated hydrocarbon;

(f) neutralizing the washed chlorinated hydrocarbon by contacting or washing it with a base;

(g) washing the sulfuric acid with a combustible composition to remove any remaining chlorinated solvent therefrom and separating the combustible composition from the sulfuric acid.

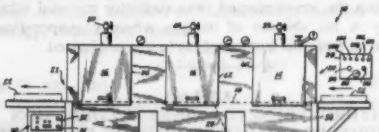
4,357,176
SYSTEM FOR CONSERVING ENERGY AND WASHING AGENTS IN A DISHWASHER

John A. Anthony, 2914 Eastchester Rd., Bronx, N.Y. 10469

Filed Feb. 23, 1981, Ser. No. 236,982

Int. Cl.³ B08B *7/04*

U.S. Cl. 134—18 **7 Claims**



1. The method of conserving energy, water and washing compound in a commercial, electrically energized dishwasher machine having one or more washing sections followed by a rinse section and having a conveyor for conveying dishes through the various sections in sequence from an entrance into the machine to an exit from the machine, comprising the steps of:

setting a predetermined time period slightly longer than the length of time required for the conveyor to convey a given food service utensil from the entrance through the respective sections of the machine to the exit of the machine,

starting the measurement of such a time period whenever the machine is manually turned on,

automatically shutting off the machine at the expiration of such a time period, and

re-starting the measurement of a new such time period whenever the presence of a food service utensil is sensed in the rinse section of the machine thereby keeping the machine running until such new time period has elapsed for assuring that the machine will fully complete the washing and rinsing of any food service utensil in the machine while advantageously shutting off the machine soon after it has become empty.

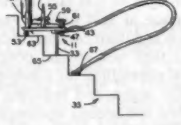
4,357,177
WHEELED ADAPTER BASE FOR UPRIGHT VACUUM CLEANERS

Robert D. Knox, 2910 Webster St., Fort Wayne, Ind. 46807

Filed Apr. 16, 1981, Ser. No. 254,946

Int. Cl.³ A47L *9/00*

U.S. Cl. 134—21 **9 Claims**



7. The method of adapting an upright vacuum cleaner for vacuuming stairways comprising the steps of:

extending a normally horizontally stowed leg to a generally vertical direction;

partially supporting the cleaner on a step surface with a portion of the cleaner overhanging the step surface and the leg extending downwardly from that overhanging portion to engage and partially support the cleaner on the next lower step surface;

coupling a flexible air transmitting hose to a cleaner suction inlet and a cleaning accessory to the hose end remote from the cleaner suction inlet; and

vacuuming a plurality of steps before moving the cleaner to a position supported on a different pair of adjacent step surfaces.

4,357,178
SCHOTTKY BARRIER DIODE WITH CONTROLLED CHARACTERISTICS AND FABRICATION METHOD

David L. Bergeron, Winooski; Daniel J. Fleming, South Burlington, both of Vt., and Geoffrey B. Stephens, Cary, N.C., assignors to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 971,166, Dec. 20, 1978. This application Nov. 10, 1980, Ser. No. 205,122

Int. Cl.³ H01L *29/48, 21/265*

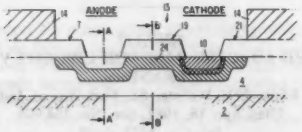
U.S. Cl. 148—1.5 **4 Claims**

1. A process for forming a Schottky Barrier diode having

controlled characteristics and a lower series resistance, comprising the steps of:

forming a first and a second openings through an oxide layer having a first thickness, on a semiconductor substrate, said first opening being over a central region of a semiconductor substrate of a first conductivity type and a first concentration, with said first opening having inclined sidewalls over an annular region of said substrate surrounding said central region, said second opening being separated by a length in an outside region from said first opening;

ion implanting through said oxide layer and into said substrate, forming a layer of said first conductivity type with a first portion in said central region having a substantially Gaussian distribution of its concentration with respect to the depth of implantation in the substrate, with an upper end of said distribution intersecting the surface of said substrate in said central region at a second concentration of between two and 10 times said first concentration of said substrate, and having a peak concentration at a first distance from said surface of said substrate in said central region, said second concentration controlling the barrier



height for the Schottky Barrier diode, and simultaneously forming said layer with a second portion in said outside region beneath said oxide layer gradually rising toward said substrate surface and being substantially parallel with said inclined sidewall;

said first distance being greater than said first thickness of said insulator layer so that said distribution intersects said substrate surface at said outside region outside of said annular region at a third concentration which is at least 10 times greater than said second concentration, said third concentration controlling the lifetime of minority carriers in said outside region and reducing series resistance between said first and second openings;

forming a Schottky Barrier contact in said first opening as a rectifying junction with said semiconductor substrate in said central region;

forming an ohmic contact in said second opening, making electrical contact with said ion-implanted layer in said outside region;

whereby a self-isolated Schottky Barrier diode is formed with controlled characteristics, having a lower series resistance connection to said ohmic contact.

4,357,179

METHOD FOR PRODUCING DEVICES COMPRISING HIGH DENSITY AMORPHOUS SILICON OR GERMANIUM LAYERS BY LOW PRESSURE CVD TECHNIQUE

Arthur C. Adams, Berkeley Heights; David E. Aspnes, and Brian G. Bagley, both of Watchung, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1980, Ser. No. 220,121

Int. Cl.³ H01L *21/205*

U.S. Cl. 148—1.5 **22 Claims**

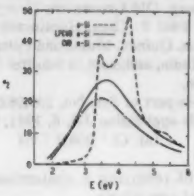
1. Method for producing a device comprising a layer of amorphous material on a substrate, with the material selected from the group consisting of silicon and germanium, where "amorphous material" refers to material containing substantially no microcrystals of more than about 100 Å size, the method comprising

(a) heating at least part of the substrate to a reaction temperature, and

(b) contacting at least part of the substrate surface heated to the reaction temperature with an atmosphere comprising a Si-yielding or Ge-yielding precursor,

CHARACTERIZED IN THAT

(c) the atmosphere has a total pressure of no more than about 3 Torr, and a precursor pressure between about 0.05 Torr and about 0.7 Torr,



(d) the reaction temperature is between about 450° C. and about 630° C. for silicon, and between about 350° C. and about 400° C. for germanium, and

(e) the material produced contains less than about 1 atomic percent of hydrogen, and has a density of at least 90% of the density of the corresponding crystalline semiconductor.

4,357,180

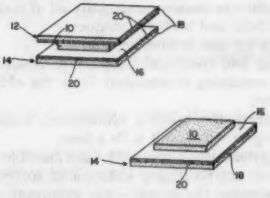
ANNEALING OF ION-IMPLANTED GAAS AND INP SEMICONDUCTORS

Bela Molnar, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 26, 1981, Ser. No. 228,425

Int. Cl.³ H01L *21/263, 29/48*

U.S. Cl. 148—1.5 **8 Claims**



1. A process of annealing ion-implanted semiconductor material comprising the steps of:

selecting an unannealed semiconductor material having an ion-implanted polished surface;

selecting a like semiconductor material having a polished surface larger than that of the first-mentioned surface;

positioning the unannealed semiconductor material in surface-to-surface contact with the larger surface which extends beyond the periphery of the smaller surface;

maintaining the surfaces in contact; and

annealing the ion-implanted semiconductor material substantially in the absence of oxygen whereby evaporation of material from the implanted surface is minimized.

4,357,181

HYDROXYBENZYL AMINES AS CORROSION INHIBITORS AND PAINT ADHESION PROMOTERS

Dieter Frank, Naperville, and Lincoln D. Metcalfe, Lagrange, both of Ill., assignors to Akzona Incorporated, Asheville, N.C.

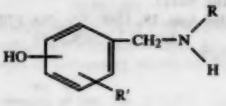
Filed Sep. 21, 1981, Ser. No. 304,525

Int. Cl.³ C23C *1/10*

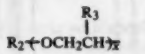
U.S. Cl. 148—6.14 R **4 Claims**

1. In a method for painting a metal surface, the step of pretreating said metal surface to improve the adhesion of paint

thereto comprising contacting said metal surface with an adhesion promoter of the formula



wherein R is selected from the group consisting of aliphatic radicals containing from about 6 to about 22 carbon atoms, R_1–(C_mH_{2m})– wherein R_1 is alkoxy containing from 6 to 22 carbon atoms and m is an integer of from 2 to 6, and



wherein R_2 is alkyl containing from 1 to 20 carbon atoms, x is an integer of from 1 to 10 and each R_3 is independently hydrogen or methyl; and R' is selected from the group consisting of hydrogen, C_1–C_{12} alkyl, and C_1–C_{12} alkoxy, at a temperature and for a period of time sufficient to improve the adhesion of paint to said surface.

4,357,182

CHROMIZATION OF STEELS BY GAS PROCESS

Robert Leveque, Firminy, France, assignor to Creusot-Loire, Paris, France

Filed Apr. 29, 1981, Ser. No. 258,822
Claims priority, application France, May 29, 1980, 80 11950
Int. Cl.³ C23C *11/10*
U.S. Cl. 148—6.35 **5 Claims**

1. Method of chromization of steels containing more than 0.2% carbon, comprising the successive steps of

(a) ionic nitriding of a surface layer having a thickness in the range of 100 to 350 microns, carried out in an atmosphere consisting of a mixture of nitrogen and hydrogen at a temperature in the range of 450° to 650° C. for a period in the range of 5 to 40 hours, so as to obtain between 1.5% and 2.5% of nitrogen in the nitrided layer;

(b) chromization by gas, of a duration in the range of 5 to 30 hours and carried out at temperatures in the range of 850° to 1100° C., said chromization employing a cement having a ferrochrome base with a chromium content in the range of 50% to 75% with a grain size in the range of 0.5 mm to 4 mm, the ferrochrome having a carbon content of 1% to 3%; and

(c) heat treatment comprising an oil quenching of the chromized piece, followed by tempering at a temperature in the range of 600° to 650° C., of a duration in the range of 30 minutes to 10 hours.

4,357,183

HETEROEPITAXY OF GERMANIUM SILICON ON SILICON UTILIZING ALLOYING CONTROL

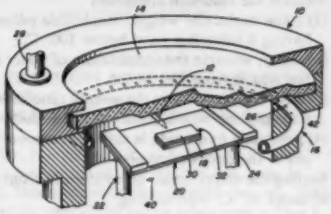
John C. C. Fan, Chestnut Hill, and Ronald P. Gale, Bedford, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

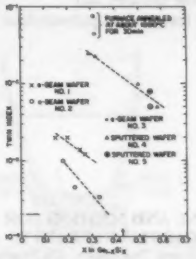
Filed Aug. 13, 1980, Ser. No. 177,567
Int. Cl.³ H01L *21/228*
U.S. Cl. 148—181 **5 Claims**

1. The method of fabricating a heteroepitaxial film on silicon comprising the steps of:

a. depositing a film of germanium on a surface of a silicon substrate to provide a germanium silicon body;

b. bringing the temperature of the body up to its alloy temperature range but less than the melting point of the silicon substrate within a period of longer than 100 microseconds and maintaining the temperature of the body at a predetermined temperature within said range which will produce an alloy having a predetermined ratio of Ge to Si, the duration of this step (b) being less than about 3 minutes; and





c. thereafter allowing the body to achieve room temperature.

4,357,184

EXPLOSIVE COMPOSITIONS BASED ON TIME-STABLE COLLOIDAL DISPERSIONS

Rejean Binet, St. Bruno; Joseph A. R. Cloutier, Montreal; Anthony C. F. Edmonds; Harold W. Holden, both of St. Hilaire, and Melvin A. McNicol, Otterburn Park, all of Canada, assignors to C-I-L Inc., North York, Canada

Continuation-in-part of Ser. No. 129,279, Mar. 10, 1980, abandoned. This application Nov. 25, 1980, Ser. No. 210,300
Claims priority, application Canada, Apr. 2, 1979, 324627; Dec. 14, 1979, 342098
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **48 Claims**

1. A water-in-oil microemulsion explosive composition comprising an aqueous solution of one or more oxygen-supplying salts as a discontinuous phase, an insoluble liquid or liquefiable carbonaceous fuel as a continuous phase, at least one sensitizing component distributed substantially homogeneously throughout the composition as a further discontinuous phase and from 0.4 to 4.0% by weight of an emulsifying agent, characterized in that the emulsifying agent comprises a combination of at least one conventional water-in-oil emulsifier, and at least one amphiphatic graft, block or branch polymeric emulsifier.

4,357,185

PROCESS FOR COATING CRYSTALLINE EXPLOSIVES WITH POLYETHYLENE WAX

Vernon D. Ringbloom, West Friendship, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 20, 1981, Ser. No. 265,300
Int. Cl.³ C06B *45/32*
U.S. Cl. 149—6 **4 Claims**

1. A method of coating explosives with polyethylene wax comprising the steps of

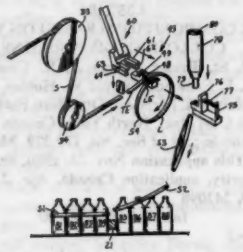
a. forming a slurry of finely divided crystalline explosive in water;
b. adding polyethylene wax-water emulsion to the slurry wherein the emulsion comprises
(1) a low molecular weight, emulsifible polyethylene wax having a softening point below 100° C.,
(2) water, wherein the weight ratio of water to polyethylene wax is from 99:1 to 1:1,
(3) stearic acid, wherein the weight ratio of stearic acid to polyethylene wax is from 1:5 to 1:6, and
(4) potassium hydroxide in sufficient amount to adjust the pH of the emulsion to above 9;
c. heating the slurry-emulsion mixture to from about 92° C. to about 98° C. with stirring;
d. adding acetic acid to the solution to adjust the pH to about 6;
e. cooling the mixture; and
f. isolating the product polyethylene wax coated explosive crystals.

4,357,186

MACHINE AND METHOD FOR FORMING AND APPLYING CARRYING STRAPS TO ARTICLE CARTONS

Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 17, 1980, Ser. No. 160,222
Int. Cl.³ B32B *31/16*
U.S. Cl. 156—73.1 **11 Claims**



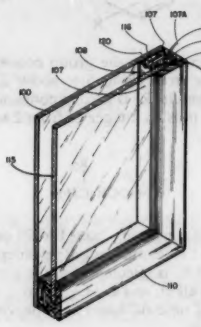
1. A machine for forming an endless strap from a supply of strip material, said machine comprising adjustable strip measuring means for supplying a strip of predetermined length from said supply of strip material, strip looping means including a pair of biased closed jaws which are opened by synchronous cam operated means for receiving said strip from said strip measuring means and for gripping said strip near the leading end thereof, motive means for rotating said strip looping means in a direction such that the trailing end of said strip overlaps said leading end thereof thereby forming a loop, pivotally mounted holding means arranged to straddle said strip looping means so as to engage said overlapped ends of said strip at spaced points therealong for engaging and holding said overlapped ends in face contacting relation and means for pivoting said holding means for bodily moving said loop strip and for removing said overlapped ends from said strip looping means, means for severing said strip at the trailing end thereof from said supply of strip material, and securing means arranged to receive said overlapped ends from said pivoted holding means and for attaching said overlapped ends of said strip together to form an endless strap.

4,357,187

WINDOW OVERLAY FOR THERMAL INSULATION

Glenn Stanley, and Michael Stanley, both of 3339 Amherst La., San Jose, Calif. 95117

Filed Aug. 18, 1980, Ser. No. 179,069
Int. Cl.³ E06B *3/64*
U.S. Cl. 156—107 **2 Claims**



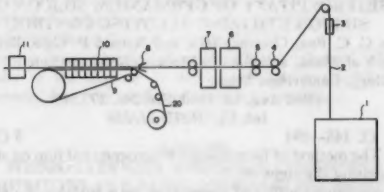
1. A method of converting an existing single pane window to a double pane evacuated window installation, said method comprising the steps of:
applying one surface of a border molding to an existing window pane using an adhesive sealant
applying additional sealant to an opposite surface of said border molding;
placing a second pane of preselected window material in contact with said additional sealant on said opposite surface of said border molding;
applying a retainer molding which interlocks with said border molding to retain said second pane thereby forming an airtight cavity between said window panes; and
evacuating the space between said existing window pane and said second pane of window material to form a preselected state of vacuum therebetween.

4,357,188

METHOD FOR MANUFACTURING CIGARETTE FILTERS

Naoki Mochida; Kazuhiko Morifuji, and Takashi Sakai, all of Toyama, Japan, assignors to Mitsubishi Rayon Co., Ltd. and Mitsubishi Acetate Co., Ltd., both of Tokyo, Japan

Filed Oct. 17, 1980, Ser. No. 198,023
Claims priority, application Japan, Oct. 22, 1979, 54-136173; Feb. 18, 1980, 55-18913
Int. Cl.³ B29N *9/02*
U.S. Cl. 156—180 **8 Claims**



1. A method for producing fibrous rod articles having a desired configuration stabilization comprising the steps of:
forming into fibrous rods cellulose esters fibers impregnated with at least one carboxylic acid ester of polyol;
uniformly impregnating said cellulose ester fibers with water; and

irradiating the fibrous rods with microwave energy to heat said water to a predetermined temperature.

4,357,189

THROUGH-COLOR PRINTING

Mervin R. Buckwalter, and Leonard N. Ray, Jr., both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 178,976, Aug. 18, 1980, abandoned. This application Aug. 3, 1981, Ser. No. 289,266

Int. Cl.³ D06P 5/20; C23C 11/00

U.S. Cl. 156—230 3 Claims

1. A process for forming a printed through color sheet structure comprising the steps of:

(a) forming a non-woven or open cell foam porous base material,

(b) preparing a transfer sheet with a sublimable dye thereon

(c) transfer printing the sublimable dye from the transfer sheet to the non-woven or open cell base material to secure complete penetration of the dye through the porous base material, and

(d) applying pressure to the base material to compress the base material, consolidate its porous structure into a non-porous structure and fuse the porous base material into a non-porous sheet material of about 1/20 the thickness of that of the original thickness of the base material, thereby there is formed a through color sheet material.

4,357,190

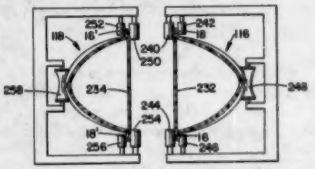
METHOD AND APPARATUS FOR MANUFACTURING NON-ROUND PLASTIC TUBING

James L. Fouss; John J. Parker, both of Findlay, Ohio, and Donald W. Sting, 358 Turtleback Rd., New Canaan, Conn., assignors to Hancor, Inc., Findlay, Ohio

Continuation-in-part of Ser. No. 967,514, Dec. 7, 1978, Pat. No. 4,245,924. This application Jun. 23, 1980, Ser. No. 162,006

Int. Cl.³ B29C 29/08

U.S. Cl. 156—244.13 32 Claims



17. An apparatus for manufacturing plastic tubing structures for conveying fluids, the tubing structure being hollow in a longitudinal direction and sufficiently rigid in cross section to withstand compressive loading forces when installed in subterranean locations, the apparatus comprising:

extruding means for extruding a sleeve of plastic material;

molding means for molding the extruded sleeve into a generally tubular structure, said molding means including a plurality of mold blocks, said mold blocks having an internal molding surfaces which are adapted to contact the sleeve, at least some of the internal molding surfaces having a generally semiround cross section and a projection to form a hinge means in an apex area of the tubing structure, the mold blocks being adapted to abut together adjacent said extruding means around the extruded sleeve, to travel away from the extruding means with the sleeve conforming to the blocks, and to separate away from the generally tubular structure, whereby the generally tubular structure includes at least two tubing structures having hinge means at their apices and longitudinally connected together adjacent terminal edge areas; and

splitting means for splitting the generally tubular structure longitudinally substantially adjacent said terminal edge areas and substantially parallel to the hinge means, whereby the generally tubular structure is split into at least two hinged tubing structures.

4,357,191

LAMINAR THERMOPLASTIC FILM CONSTRUCTIONS

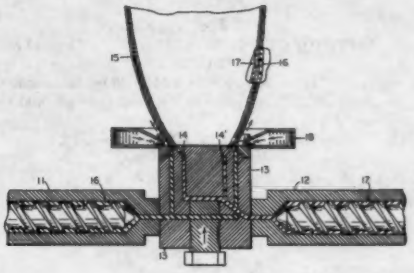
Edward M. Bullard, Rochester, and Gregory M. Smith, Palmyra, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 126,932, Mar. 3, 1980, Pat. No. 4,303,710, which is a continuation of Ser. No. 934,235, Aug. 16, 1978, abandoned. This application Sep. 3, 1981, Ser. No. 298,860

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.³ B29D 23/04; B32B 27/08; B65D 31/00

U.S. Cl. 156—244.14 2 Claims



1. A method of forming a laminar film structure comprising, coaxially coextruding in a blown film process from concentric tubular die orifices separate molten streams of:

(a) at least one layer comprising a general purpose low density polyethylene resin with;

(b) a second thinner layer comprising a resinous blend of (1) a high density polyethylene and (2) a linear low density polyethylene-alpha-olefin copolymer, wherein said blend contains a major amount of said copolymer; merging said streams outside of said die orifices; and subjecting said coextruded tubular streams to an internal pressure trapped within the tube so as to effect a blow-up ratio of from about 1.5:3.0:1 and thereafter cooling the molten resins, said low density polyethylene having a thickness on the order of from about 65% up to about 85% of the overall thickness of said laminate.

4,357,192

METHOD FOR APPLYING STICKERS TO PUSH-THROUGH CONTAINERS

Theo Moser, Steinenberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,447

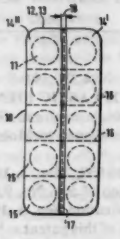
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004637

Int. Cl.³ B32B 31/18

U.S. Cl. 156—252 6 Claims

1. A method of applying a perforated, releasable sheet in a strip form and provided on one side with adhesive substance and on the other side with repetititve indicia arranged to overlay a series of separable preformed pockets in a filled and covered container having a predetermined length and width, the step of applying at least two of said strips, side-by-side, each strip covering two rows of said preformed pockets, said

strips being in spaced apart relation whereby a longitudinal area of said covered container is viewable between said strips



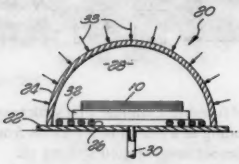
whereby said releasable sheet may be removed from said covered container and transferred to a record.

4,357,193

METHOD OF FABRICATING A COMPOSITE STRUCTURE

Timothy W. McGann, Anaheim, and William G. Olsen, Whittier, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 21, 1979, Ser. No. 40,799
Int. Cl.³ B29C *17/00*
U.S. Cl. 156—286 **26 Claims**



1. A method of fabricating a composite structure comprising the steps of:

positioning in an evacuable chamber a laminate comprising a plurality of plies of fibrous material in an uncured resin matrix, the laminate having air entrapped therein;

applying vacuum to the chamber to create a partial vacuum environment in the chamber;

heating the laminate to within a temperature range wherein the resin matrix exhibits a viscosity which allows air migration through the resin matrix; and

maintaining the laminate within the temperature range and partial vacuum environment for a time duration sufficient to cause a portion of the air entrapped in the laminate to be expelled.

4,357,194

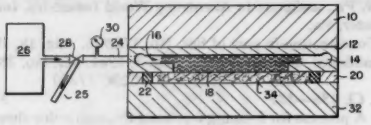
STEAM BONDING OF SOLID LIGNOCELLULOSIC MATERIAL

John Stofko, 36 W. 320 River Grange Rd., St. Charles, Ill. 60174, assignor to John Stofko, St. Charles, Ill. and John Jansky, Paris, France

Filed Apr. 14, 1981, Ser. No. 254,224
Int. Cl.³ B32B *5/16*
U.S. Cl. 156—308.6 **12 Claims**

1. In a method of bonding solid materials and thereby producing a waterproof bond, comprising providing on a surface of said solid material an adhesive-free bonding material comprising at least one sugar, starch or mixture thereof, and pressing surfaces of said solid material together at an elevated temperature and for a time sufficient to effect bonding by transformation reactions of the sugar, starch or mixture thereof, and wherein the time, temperature and pressure are sufficient to produce a waterproof bond, the improvement wherein:

said solid material is a lignocellulosic material, and during said pressing said lignocellulosic material is maintained in a sealed press and subjected to live steam to heat the



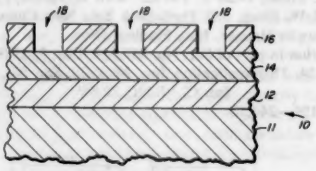
interior of the solid material to about 320°–420° F., said live steam serving to generate natural catalysts and to activate phenolic material on surfaces of said lignocellulosic material, which phenolic material reacts under the effects of said steam with said sugar, starch or mixture thereof to produce said waterproof bond.

4,357,195

APPARATUS FOR CONTROLLING A PLASMA REACTION

Georges J. Gorin, Emeryville, Calif., assignor to Tegal Corporation, Novato, Calif.

Division of Ser. No. 51,661, Jun. 25, 1979, Pat. No. 4,263,088.
This application Nov. 10, 1980, Ser. No. 205,402
Int. Cl.³ C23C *15/00*; C23F *1/00*
U.S. Cl. 156—345 **7 Claims**



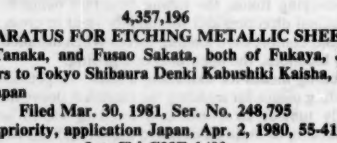
1. An apparatus for controlling a plasma reaction in which a layer of material is etched in a plasma of reactants formed by the application of a radio frequency power to said reactants, said apparatus comprising: a detector for monitoring said reaction; means responsive to said detector for switching said radio frequency power from a continuous mode to a modulated mode when a change is detected in said plasma reaction.

4,357,196

APPARATUS FOR ETCHING METALLIC SHEET

Hiroshi Tanaka, and Fusao Sakata, both of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 30, 1981, Ser. No. 248,795
Claims priority, application Japan, Apr. 2, 1980, 55-41957
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—345 **3 Claims**



1. An apparatus for etching a metallic sheet comprising: means for transferring a metallic sheet having an anticorrosive pattern defining apertures on its bottom surface and an anticor-

rosive pattern defining apertures smaller than said apertures on its upper surface; a first chamber having means for coating an etching solution on the upper surface of said transferred metallic sheet, means for drawing in said coated etching solution, and means for spraying an etching solution on the bottom surface of said metallic sheet; and a second chamber having means for spraying an etching solution on the upper surface and the bottom surface of said metallic sheet transferred from said first chamber.

4,357,197

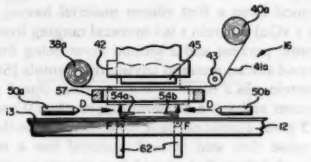
APPARATUS FOR BONDING A POCKET BLANK TO A GARMENT PORTION

Robert J. Wilson, Norcross, Ga., assignor to General Fabric Fusing, Inc., Cincinnati, Ohio

Division of Ser. No. 178,469, Aug. 15, 1980, Pat. No. 4,316,756. This application Nov. 27, 1981, Ser. No. 325,130

Int. Cl.³ A41D *27/20*

U.S. Cl. 156—354 **18 Claims**



18. An apparatus for bonding a pocket blank to a garment portion, said apparatus comprising:

a conveyor including means for the intermittent controlled movement of the same, said conveyor having a longitudinal dimension along a defined path of travel;

a continuous supply of pocket blank cloth disposed transversely across one end of said conveyor at a first station;

a pocket blank cutting die assembly having a shape to cut a pocket blank, said die disposed at the first station and supported above said conveyor for intermittent downward motion at controlled intervals to cut a plurality of pocket blanks, each having front and rear surfaces and each having a pocket body with connected laterally extending top, side and bottom member tabs, and each such tab defining a leading edge and a trailing edge;

means for detecting a pocket blank on said conveyor and for stopping the conveyor travel to dispose the pocket blank at a second station for application of adhesive, and subsequently to dispose the pocket blank at a third station for fusing to a garment portion;

pocket body restraining means disposed above the plane of said conveyor for lowering and engagement on the pocket blank at the connections between the pocket body and the top, side and bottom member tabs thereof leaving the top, side and bottom member tabs unrestrained against upward movement;

member tab folding means in the form of air blast nozzles disposed beneath the plane of said conveyor to direct blasts of air upwardly against the front surface of the member tabs to raise the same upwardly and air blast nozzles disposed above the plane of the conveyor for directing blasts of air laterally and against the upwardly raised member tabs to fold the same over pocket body restraining means and into general proximity with adjacent areas of the pocket body rear surface to display the front side of the member tabs upwardly;

a plurality of adhesive supply spools each bearing a roll of heat fusing adhesive in strip form disposed upon a release backing and having a respective plurality of release backing take-up spools for disposing a strip of adhesive above each of the member tabs of the pocket blank to be pressed downwardly for engagement with and for fusing to the respective member tabs;

a first heated platen disposed above the plane of said conveyor for downward motion to crease the respective member tabs, and to apply an adhesive to the member tabs from the leading edge to the trailing edge thereof, the platen being of such a temperature as to soften the adhesive sufficiently so as to cause application of the adhesive to the cloth confined to areas of contact with the platen and to cause terminal breakage of the supplied adhesive strip outside the trailing edge of the member tab;

control means for unrolling the heat fusing adhesive strips for disposition of the point of terminal breakage above the leading edge of the member tab;

garment cloth supply means disposed downstream said second station at a third station for overlaying garment cloth atop a prepared pocket blank;

a garment cloth cutting die disposed at the third station for cutting the garment cloth to form the garment portion; and

a second heated platen disposed above the plane of said conveyor at the third station for intermittent downward motion to fuse the overlayed garment portion to the prepared pocket blank.

4,357,198

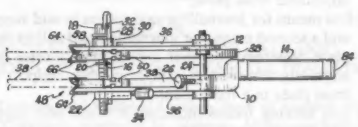
TAPE APPLICATOR

Isaac E. Ezquerro, P.O. Box 736, Brawley, Calif. 92227

Filed Aug. 17, 1981, Ser. No. 293,071

Int. Cl.³ B32B *31/08, 31/18*

U.S. Cl. 156—391 **18 Claims**



1. A dual tape masking machine comprising:

(a) a first frame for mounting a first roll of tape and having a handle;

(b) an applicator head on said frame for pressing said tape against a surface as it feeds from said roll, said head and frame defining a prescribed path for dispensing tape;

(c) a second frame for mounting a second roll of tape and having an applicator head thereon, said second head and second frame defining a prescribed tape dispensing path;

(d) means releasably mounting said frames substantially parallel with said applicators side by side to permit concomitant application of tape from each of said frames, or alternative use of said first frame independently of said second frame to apply a single line of tape.

4,357,199

APPARATUS FOR FORMING FLEXIBLE TUBING

Wayne K. Fairchild, 3620 W. Pendleton Ave., Santa Ana, Calif. 92704

Filed Dec. 4, 1980, Ser. No. 213,176

Int. Cl.³ B65H *81/04*

U.S. Cl. 156—428 **11 Claims**

1. An interchangeable mandrel unit for forming a continuous, reinforced, flexible tube from an indefinite length of ribbon material, together with an indefinite length of wire, wherein said mandrel comprises:

a plurality of angularly disposed cylindrical rollers which are rotatably juxtapositioned relative to each other, each roller being fixed at a given angular displacement with respect to the central longitudinal axis of said mandrel;

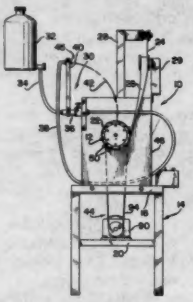
a plurality of fixed annular grooves formed in each roller

and arranged in progressive alignment with said fixed grooves of the adjacent rollers, to allow the forming tube to advance axially along said rollers;

a support plate adapted to be secured in a fixed position and to rotatably support one end of said rollers thereon in a pre-aligned fixed position;

a nonadjustable truss plate adapted to rotatably support the opposite end of said rollers thereon and being fixed in a predetermined position relative to said support plate;

a centrally disposed mainstay defining said central longitudinal axis of said mandrel, said mainstay fixedly connecting said support plate and said truss plate together in said fixed predetermined position, whereby said rollers are interposed therebetween at a fixed predetermined angular



displacement with respect to said mainstay and said nonadjustable truss plate;

a first means for journalling said rollers in said support plate, and a second means for journalling said rollers in said truss plate, wherein said first and second journal means are angularly disposed in said respective support plate and truss plate in a fixed manner;

a first locking means included between said support plate and said mainstay, and a second locking means included between said nonadjustable truss plate and said mainstay, whereby said first locking means prevents movement between said support plate and said mainstay, and said second locking means prevents movement between said mainstay and said nonadjustable truss plate.

4,357,200

METHOD FOR PRODUCING PLATE-, TAPE- OR FILM-SHAPED SI CRYSTAL BODIES FOR SOLAR CELLS

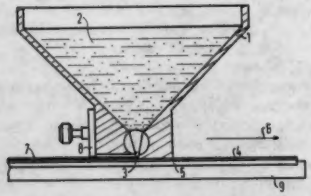
Christa Grabmaier, Berg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,780

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019653

Int. Cl.³ C30B *29/06*

U.S. Cl. 156—603 **9 Claims**



1. In a method of producing plate-, tape- or film-shaped Si crystal bodies having crystalline pillar structures therein, which are essentially equivalent to crystalline columnar structures, without melting of the base material which forms such Si bodies and which bodies are useful for further processing into large-surface solar cells, which includes the steps of:

(a) forming a slurry from an admixture of a Si powder having an average particle size in the range of less than about 1 μm, optional additives and a compatible liquid binder;

(b) extruding such layer with an extrusion means onto a first inert support member as a relatively thin slurry layer, which is dried into a self-supporting layer and removing the support member; and

(c) sintering the self-supporting layer on a temperature-stable second inert support member in a protective gas atmosphere at a sintering temperature ranging from about 1350° C. to below about 1430° C. in such a manner that a layer of Si crystal particles is generated, each particle having an average particle diameter substantially corresponding to the thickness of the self-supporting layer;

the improvement comprising:

forming at least two layers in accordance with steps (a) and (b) from different silicon materials, with a first layer being formed from a first silicon material having the formula (Si+xGe) wherein x is a numeral ranging from 0 to 5 gram atomic percent and a second layer being formed from a second silicon material having the formula [Si+(x+y)Ge] wherein x is a numeral ranging from 0 to 5 gram atomic percent and y is a numeral greater than 0 and ranging up to 5 gram atomic percent, with the proviso that y has such a value that said second material has a melting point enough below that of said first sintering material;

positioning said layers onto one another and subjecting the resultant stack to sintering in accordance with step (c) at a temperature at which only said second silicon material becomes molten; and

cooling the sintered structure to obtain a unitary Si body.

4,357,201

METHOD FOR PRODUCING PLATE-, TAPE- OR FILM-SHAPED SI CRYSTAL BODIES FOR SOLAR CELLS

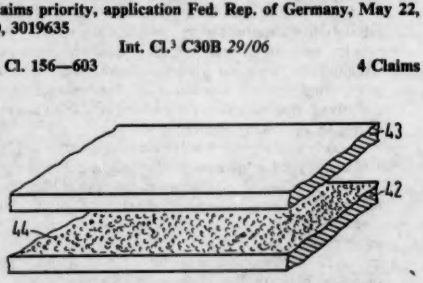
Christa Grabmaier, Berg, and Heinz Holzapfel, Augsburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,921

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019635

Int. Cl.³ C30B *29/06*

U.S. Cl. 156—603 **4 Claims**



1. In a method of producing plate-, tape- or film-shaped Si crystal bodies having crystalline pillar structures therein, which are substantially equivalent to crystalline columnar structures, without melting of the base material which forms such Si bodies and which bodies are useful for further processing into large-surface solar cells, which include the steps of:

(a) forming a slurry from an admixture of a Si powder having an average particle size in the range of less than about 1 μm, optional additives and a compatible liquid binder;

(b) extruding such slurry with an extrusion means onto a first inert support member as a relatively thin slurry layer,

which is dried into a self-supporting layer and removing the support member; and

(c) sintering the self-supporting layer on a temperature-stable second inert support member in a protective gas atmosphere at a sintering temperature below about 1430° C. in such a manner that a layer of Si crystal particles is generated, each particle having an average particle diameter substantially corresponding to the thickness of the self-supporting layer;

the improvement comprising: coating said self-supporting Si slurry layer, prior to sintering, with a substantially uniform layer of germanium powder and subjecting the resultant layer structure to sintering in accordance with step (c).

4,357,202

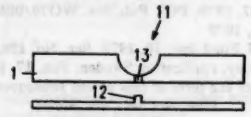
REFRACTORY OXIDE FABRICATION

Richard F. Rutz, Cold Spring, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 12, 1981, Ser. No. 273,272

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; C23F *1/02*

U.S. Cl. 156—635 **5 Claims**



1. In a process for etching a shape in a refractory oxide material taken from the group of Al_2O_3, SiO_2, MgO and Al_2MgO_4, the improvement comprising:

placing a preformed pattern of a material taken from the group of titanium, tantalum, zirconium and hafnium having a melting point higher than 1500° C. but less than the melting temperature of said preformed pattern material in contact with said refractory oxide material, and

heating said refractory oxide and said preform pattern combination to a range of 1500° C. to the melting temperature of said preformed pattern in the presence of a neutral gas containing hydrogen for a time sufficient to effect an erosion of the surface of said refractory oxide material.

4,357,203

PLASMA ETCHING OF POLYIMIDE

Joseph Zelez, Tannersville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,852

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 **7 Claims**

1. In a method of forming a multilayer metallization system including the step of forming vias in a polyimide dielectric insulating layer overlying a layer of metal by oxygen plasma etching, the improvement comprising plasma etching with a mixture of argon and hydrogen after oxygen plasma etching.

4,357,204

CHEMICALLY MACHINED SPECTRAL GRATING

David L. Jungkman, Hudson, N.H., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 1, 1981, Ser. No. 269,193

Int. Cl.³ G02B *5/18*

U.S. Cl. 156—645 **10 Claims**

1. A process for manufacturing a diffraction grating having a low blaze angle, said process comprising the method steps of:

A. forming an etchable monocrystalline material in which the crystal planes of said material are oriented at a first angle to the top surface of said material, said first angle as close as possible to the desired blaze angle;

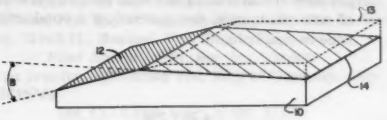
B. finishing said top surface to create a substantially flat and polished surface;

C. exposing one end of said material to an etchant in order to expose the desired crystal face in said material;

D. removing said top surface until a new top surface is obtained, which new top surface forms the desired blaze angle with said exposed crystal face, wherein the intersection of said exposed crystal face with said new top surface of said material forms a reference line;

E. oxidizing said material to create an oxide coating over said new top surface;

F. applying a layer of photoresist material over said oxide coating;



G. placing a mask over said photoresist material, said mask having a series of narrow opaque lines whose spacing is the desired spacing of grooves associated with said blaze angle and wherein said mask is so placed such that said opaque lines are substantially parallel to said reference line;

H. etching said oxide coating so that lines of said oxide coating under said mask still remain on said new top surface; and

I. exposing said material to an etchant so that crystal surfaces, parallel to said crystal face, which intersect said lines of said oxide coating, are formed.

4,357,205

METHOD FOR ETCHED AND/OR GALVANIC PRODUCTION OF RING ZONES IN SMALL DIAMETER HOLES

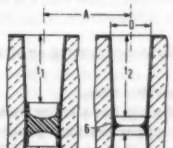
Guenther Trausch, and Wilfried Houben, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,596

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035859; Aug. 18, 1981, 3132658

Int. Cl.³ B44C *1/22*; C23F *1/00*; H01L *21/312*

U.S. Cl. 156—656 **10 Claims**



1. A method for production of electrically conducting or insulating ring zones on the wall of a small diameter continuous hole in a workpiece having a thickness in the range of 0.1 to 3 millimeters comprising the steps of:

applying a base metallization to the surface of the workpiece including said walls of said holes;

filling said holes with a positive photoresist and drying said photoresist such that said photoresist withdraws from the hole openings on the workpiece surfaces toward the inside of the hole forming a plug therein;

subjecting both sides of said workpiece to a means for making said photoresist partially soluble for a resist developer;

dissolving said partially soluble photoresist away from free-

ing portions of said wall of said hole of resist up to a selected resist ring thickness; and

generating a ring zone in the interior of said hole by one of the following series of steps,

galvanically depositing at least one metal layer on said portions of said wall of said hole which have been freed of said photoresist, dissolving said photoresist plug for exposing said base metallization, and selectively etching away said exposed base metallization for generating an insulating ring zone in said hole, and

removing said base metallization by etching from said portions of said wall of said hole which have been freed of said photoresist for generating a conducting ring zone in said hole.

4,357,206

PROCESS AND APPARATUS FOR THE CONCENTRATION OF AN ALKALINE SOLUTION

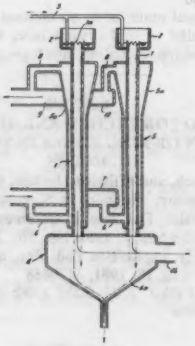
Hans Kühnlein, Füllinsdorf; Hans R. Küng, Frenkendorf, and Georg Molnar, Füllinsdorf, all of Switzerland, assignors to Bertrams AG, Basel, Switzerland

Filed Jun. 26, 1981, Ser. No. 277,683

Claims priority, application Switzerland, Jul. 11, 1980, 5326/80

Int. Cl.³ B01D *1/10, 1/22*

U.S. Cl. 159—13 A 7 Claims



1. An apparatus for concentrating an alkaline solution which comprises:

at least one evaporator tube,

means for introducing the alkaline solution to be concentrated into the upper portion of said evaporator tube so that a film of said alkaline solution falls along the internal surface of said evaporator tube,

a collecting chamber communicating with the lower portion of said evaporator tube for recovering the concentrated alkaline solution,

heat exchange jacket means surrounding and spaced apart from said evaporator tube along its substantial length, said jacket means and evaporator tube defining an annular channel therebetween for receiving a heat-exchange fluid, said annular channel being sized and dimensioned at the upper portion of the evaporator tube for reducing the flow rate of the heat exchange fluid to such an extent that a critical heat flow density is not reached and sufficient to avoid the Leidenfrost effect, and

means for introducing the heat exchange fluid into the lower portion of said heating jacket and means for removing the heat exchange fluid from the enlarged upper portion of said heat jacket.

4,357,207

LOW MOLECULAR WEIGHT CATIONIC POLYMERS AS DEPOSIT INHIBITORS AND DISPERSANTS IN BLACK LIQUOR RECOVERY SYSTEMS

Monica A. Yorke, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Jun. 1, 1981, Ser. No. 269,131

Int. Cl.³ B01D *1/00*

U.S. Cl. 159—47 WL 4 Claims

1. A method of inhibiting and dispersing deposit formation on metal surfaces of an evaporator used for the processing of black liquor which comprises the step of treating the black liquor, at any point prior to completion of said processing, with a deposit inhibiting concentration of a low molecular weight poly(diallyldimethylammonium chloride).

4,357,208

METHOD OF MAKING PULP

Per V. Peterson, Sundsvall, and Hans E. Höglund, Matfors, both of Sweden, assignors to SCA Development Aktiebolag, Sweden

PCT No. PCT/SE79/00013, § 371 Date Oct. 17, 1979, § 102(e) Date Sep. 27, 1979, PCT Pub. No. WO79/00634, PCT Pub. Date Sep. 6, 1979

PCT Filed Jan. 18, 1979, Ser. No. 196,701

Claims priority, application Sweden, Feb. 17, 1978, 7801877

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

Int. Cl.³ D21B *1/12*

U.S. Cl. 162—23 6 Claims

1. A method for refining lignocellulose containing material comprising the steps of pretreating the lignocellulose containing material with a medium selected from steam, heat, ligninsoftening chemicals and combinations thereof; refining the pre-treated lignocellulose containing material in a refining zone of a disc refiner containing refiner discs and a housing surrounding said refiner zone, wherein during said refining step water is added to said lignocellulose containing material and the lignocellulose containing material is passed through a gap between the refining discs so as to form a suspension containing said lignocellulose containing material in a concentraion of from 8% to 15% at the point of discharge of said suspension from said gap and so as to substantially reduce the steam development in said gap, thereby reducing the steam flow backwards against the lignocellulose containing material coming into said refining zone; and passing said suspension into said housing surrounding the refiner discs, wherein water is supplied to said refiner housing to form a diluted suspension such that the concentration of the refined lignocellulose containing material in said diluted suspension exiting the refiner from the housing is in the range of from 1% to 6% and wherein said refiner housing is maintained filled with said diluted suspension to increase the retention time of the material in said gap by breaking the acceleration of the material coming through said gap, to condense steam flowing through said gap, and to conduct heat away from said refining zone.

4,357,209

NUCLEAR DIVISIONAL REACTOR

John L. Rugh II, deceased, late of Johnstown, Pa., and Ailsa P. Rugh, administratrix, R.D. #5, Menoher Heights, Box 128, Johnstown, Pa. 15905

Filed Jan. 14, 1980, Ser. No. 111,944

Int. Cl.³ G21C *15/00*

U.S. Cl. 376—391 19 Claims

1. A nuclear divisional reactor including:

(a) a reactor core having side and top walls

(b) a closed nuclear reactor coolant circulating system for said reactor core and forming a part of said reactor core

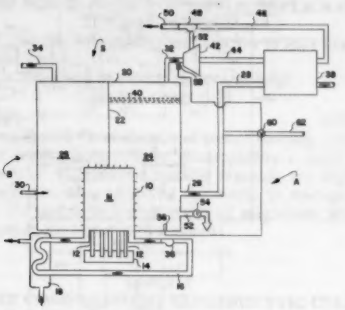
(c) a heat exchanger substantially surrounding said core

(d) said heat exchanger including a plurality of separate fluid

holding and circulating chambers each in contact with a portion of said core

(e) said closed nuclear reactor coolant circulating system for said reactor core being separate and independent from said plurality of separate fluid holding and circulating chambers of said heat exchanger surrounding said core

(f) control rod means associated with said core and external of said heat exchanger including control rods and means for moving said control rods



(g) each of said chambers having separate means for delivering and removing fluid therefrom

(h) separate means associated with each of said delivering and removing means for producing usable energy external of said chambers

(i) each of said means for producing usable energy having variable capacity energy output

(j) thereby making available a plurality of individual sources of usable energy of varying degrees.

4,357,210

ELECTRIC FURNACE FOR THE CALCINATION OF CARBONACEOUS MATERIALS

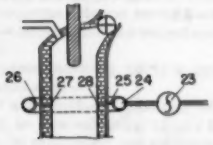
Michel Aubry, LeFayet; Jean-Claude Bernard, Ste Foy les Lyon, and Paul Philipon, St. Etienne, all of France, assignors to Societe des Electrodes et Refractaires Savoie/SERS, Paris, France

PCT No. PCT/FR79/00049, § 371 Date Feb. 8, 1981, § 102(e) Date Dec. 30, 1980, PCT Pub. No. WO80/02740, PCT Pub. Date Dec. 11, 1980

PCT Filed Jun. 8, 1979, Ser. No. 227,052

Int. Cl.³ C10B *3/00, 19/00, 21/00*

U.S. Cl. 202—85 **2 Claims**



1. A furnace for the calcination of a charge of carbonaceous materials containing volatile materials comprising a vertical shaft provided with means for introducing carbonaceous materials into an upper zone and means for extracting the carbonaceous materials from a lower zone, said means maintaining during operation the shaft fully laden by the charge of carbonaceous materials, means including current inputs adapted to establish an electrical contact between the charge and said current inputs whereby an electric current passes longitudinally through said charge to effect resistance heating thereof, means external to said vertical shaft, for operatively connecting the upper zone of the furnace with the lower zone, comprising means for entraining reducing gases to be extracted from the upper zone for injection into the lower zone and including means for introducing at least a part of said gases extracted into the lower zone of the furnace, and means for injecting a combustion supporting gas into said upper zone of the shaft.

4,357,211

AIR CONTROL ARRANGEMENT FOR REGENERATIVELY-HEATED COKE OVENS

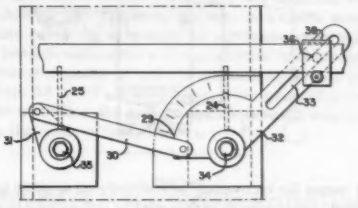
Folkard Wackerbarth; Gerd Halbherr, and Horst Kuhlmann, all of Bochum, Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Apr. 30, 1981, Ser. No. 259,050

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018361

Int. Cl.³ C10B *5/12, 21/06, 21/10*

U.S. Cl. 202—111 **1 Claim**



1. In a coke oven battery adapted to be regeneratively heated by either rich gas or lean gas and including air inlet chests spaced along the battery for admitting air to the sole flue of the coke oven battery; the improvement comprising:

a device for controlling the rate of flow of gas through said air inlet chests comprising:

first and second flap members which are adapted to move between a first position essentially parallel to the flow of said gas and a second position essentially perpendicular to the flow of said gas,

first and second pivot members along which said first and second flap members are mounted for pivotal movement between said first and second positions,

an arm connected at a first end to said first pivot member and pivotally connected at a second end to a first end of a link member,

an actuating rod adapted to be moved axially in a direction perpendicular to the central axes of said first and second pivot members, said actuating rod bearing a pin, and

a member affixed to said second pivot member which bears an arm and having therein a slot adapted slidingly to receive said pin on said actuating rod, said member having a pivotal connection to a second and opposite end of said link member.

4,357,212

ENERGY EFFICIENT APPARATUS FOR VAPORIZING A LIQUID AND CONDENSING THE VAPORS THEREOF

Harry F. Osterman, Westfield, N.J., and George C. Nylen, Tonawanda, N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 29, 1980, Ser. No. 220,883

Int. Cl.³ B01D *3/42*

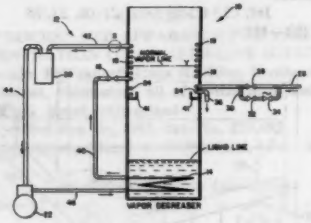
U.S. Cl. 202—170 **7 Claims**

1. An energy efficient apparatus for vaporizing a liquid and condensing the vapors thereof, said apparatus utilizing heat of compression for vaporizing said liquid, said apparatus comprising

(a) a still for containing a liquid to be vaporized;

(b) a closed refrigeration system comprising (1) a condenser located within said still and in heat-transfer relationship with said liquid, (2) an evaporator coil, (3) a compressor, and (4) a sensible heat-conveying line connecting said condenser to said evaporator coil;

said closed refrigeration system for containing a working fluid, said compressor for raising said working fluid to a high pressure and adding heat of compression thereto, said condenser for transferring heat including said heat of compression from said working fluid to said liquid, as a result of which said liquid is vaporized and the resulting fluid contains sensible heat, and said sensible heat-conveying line for passing said resulting working fluid from said condenser to said evaporator coil whereby the working fluid entering said evaporator coil contains said sensible heat;



(c) means for recovering substantially all sensible heat from said compressor over that used to boil-up said liquid, so as to maintain the thermal balance of said apparatus, including at least one auxiliary condensing coil for contacting the vapors resulting from vaporization of said liquid and extracting therefrom, heat in excess of that necessary to maintain thermal balance in said apparatus; said at least one auxiliary condensing coil being separate from said closed refrigeration system, and being situated between said condenser and said evaporator coil whereby the excess heat is removed prior to said vapors contacting and condensing upon said evaporator coil; said at least one auxiliary condensing coil having heat extraction controlling means; and

(d) said heat extraction controlling means for controlling heat extraction by said at least one auxiliary condensing coil whereby said excess heat is removed from said vapors by said at least one auxiliary condensing coil.

4,357,213

METHOD OF RECOVERY OF LIQUID CHLORINE DERIVATIVES OF HYDROCARBONS

Alexandr P. Mantulo, ulitsa Kibalchicha, 14, kv. 118; Ivan N. Novikov, ulitsa A.Malyshko, 19a, kv. 57, and Isai N. Feldman, prospekt Korneichuka, 38a, kv. 62, all of Kiev, U.S.S.R.

Filed Sep. 18, 1980, Ser. No. 188,545

Int. Cl.³ B01D *1/22, 3/02*

U.S. Cl. 203—89 **8 Claims**

1. A method for recovering liquid chlorine derivatives of hydrocarbons from an impure liquid containing impurities that are less volatile than said liquid chlorine derivatives, comprising: heating a second liquid which is chemically inert and has a substantially higher vapor pressure relative to said impure liquid, and in which said impurities are substantially soluble, to a temperature below the vaporization temperature of said impurities, but above the vaporization temperature of said derivatives, contacting said impure liquid with the surface said second liquid thereby recovering a substantially pure vapor of said derivatives, and substantially retaining the impurities in said second liquid.

4,357,214

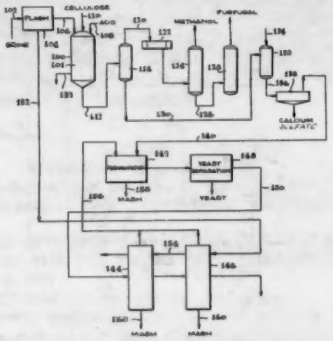
USE OF GEOTHERMAL HEAT TO RECOVER ALCOHOL AND OTHER VALUABLE PRODUCTS

Phillip N. La Mori, Corona Del Mar, and Raymond L. Zahradnik, Irvine, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Feb. 8, 1980, Ser. No. 119,669

Int. Cl.³ B01D *3/00*

U.S. Cl. 203—100 **6 Claims**



1. A process for producing ethanol from wood waste which comprises:

(a) passing hot geothermal brine to a flash zone to flash off steam,

(b) passing said flashed steam to a digestor containing wood waste and an acid for hydrolyzing said wood waste and forming a dilute solution comprising water, a fermentable sugar, furfural and methanol,

(c) heating said dilute solution under conditions to convert said fermentable sugar to a dilute solution of ethanol contained in a mash, and

(d) distilling said dilute solution of ethanol.

4,357,215

FAST ION CONDUCTORS

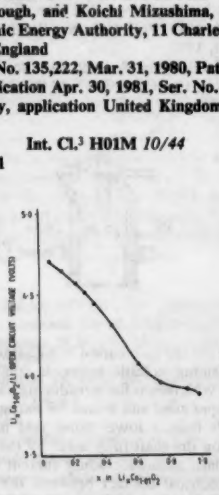
John B. Goodenough, and Koichi Mizushima, both of United Kingdom Atomic Energy Authority, 11 Charles II St., London SW1Y 4QP, England

Division of Ser. No. 135,222, Mar. 31, 1980, Pat. No. 4,302,518. This application Apr. 30, 1981, Ser. No. 259,104

Claims priority, application United Kingdom, Apr. 5, 1979, 7911953

Int. Cl.³ H01M *10/44*

U.S. Cl. 204—2.1 **3 Claims**



1. A method of making an ion conductor of the formula

$A_xM_yO_2$ and having the layers of the α-$NaCrO_2$ structure, in which formula A is Li, Na or K, wherein M is a transition metal, wherein x is less than 1; and wherein y is approximately equal to 1 which method comprises extracting A^+ cations from a compound having the formula $A_{x'}M_yO_2$ wherein A, M, and y are as defined hereinbefore and wherein x' is less than or equal to 1.

4,357,216

METHOD FOR ELECTROFORMING A REPLICA ON A RECORD MATRIX

William C. Brooks, Brownsburg, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,011
Int. Cl.³ C25D *1/20*
U.S. Cl. 204—5 6 Claims

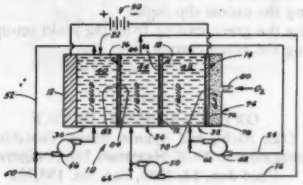
1. In a method for manufacture of record molding stampers wherein a replica is formed by electroplating a metal on a matrix made of magnetizable metallic material, the improvement which comprises subjectng the matrix to demagnetization until the matrix is free of zones of magnetism prior to electroforming the metal on the matrix.

4,357,217

THREE COMPARTMENT ELECTROLYTIC CELL METHOD FOR PRODUCING HYDROGEN PEROXIDE

Christa G. Kuehn, Irvine, and Frederic Leder, Corona Del Mar, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Oct. 2, 1981, Ser. No. 307,926
Int. Cl.³ C25B *1/30*
U.S. Cl. 204—84 9 Claims



1. A method for producing hydrogen peroxide comprising the steps of:

(a) introducing an acidic aqueous anolyte between an acid resistant anode and a first surface of a cation membrane permeable only to positive ions;

(b) introducing a basic aqueous catholyte between a first surface of an anion membrane permeable only to negative ions and a first surface on a gas-diffusion cathode;

(c) introducing an aqueous solution between a second surface on said cation membrane and a second surface on said anion membrane;

(d) introducing oxygen-containing gas to a second surface on said gas-diffusion cathode;

(e) connecting said acid resistant anode and said gas-diffusion cathode with an external power supply for causing,

(i) the oxygen to be reduced at said diffusion cathode to produce O_2H^- ions within said basic aqueous catholyte,

(ii) the water in said acidic aqueous anolyte to be oxidized to produce hydrogen ions (H^+), within said acidic aqueous anolyte, and

(iii) the hydrogen ions (H^+) to move through the cation membrane from the acidic aqueous anolyte to the aqueous solution and the O_2H^- ions to move through the anion membrane from the basic aqueous catholyte to the aqueous solution whereupon said hydrogen ions (H^+) react with the HO_2^- ions to produce hydrogen peroxide within said aqueous solution; and,

(f) withdrawing aqueous solution and hydrogen peroxide from between the anion membrane second surface and the cation membrane second surface.

4,357,218

CATION EXCHANGE MEMBRANE AND USE THEREOF IN THE ELECTROLYSIS OF SODIUM CHLORIDE

Maoni Seko, Tokyo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 836,417, Sep. 26, 1977, which is a continuation-in-part of Ser. No. 745,196, Nov. 26, 1976, abandoned, which is a continuation of Ser. No. 556,288, Mar. 7, 1975, abandoned. This application Dec. 10, 1980, Ser. No. 214,876
Claims priority, application Japan, Mar. 7, 1974, 49-25718
The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.
Int. Cl.³ C25B *1/34, 9/00, 13/02, 13/08*
U.S. Cl. 204—98 68 Claims

1. A process for the electrolysis of an aqueous sodium chloride solution which comprises passing an electric current through said solution in an electrolytic cell separated into an anode chamber and a cathode chamber by a cation exchange membrane consisting essentially of perfluorocarbon polymer having pendant carboxylic acid and sulfonic acid groups, the ion exchange capacity of sulfonic and carboxylic acid groups being from 0.5 to 2.21 milliequivalents per gram of dry resin, the ratio of carboxylic acid groups to sulfonic acid groups being in the range of from 1:100 to 100:1.

4,357,219

SOLVENTLESS UV CURED THERMOSETTING CEMENT COAT

Frank A. Sattler, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 27, 1980, Ser. No. 163,900
Int. Cl.³ C08F *2/50*
U.S. Cl. 204—159.15 5 Claims

1. A solventless thermosetting cement coat composition, curable with UV light to the B-stage in one step, then with heat to the C-stage in a separate step, comprising

(A) about 40 to about 90% of a solution of about 25 to about 50% monoacrylate selected from the group consisting of phenoxyethyl acrylate, ethoxyethyl acrylate, dicyclopentadiene acrylate, and mixtures thereof and about 50 to about 75% of a compound selected from the group consisting of a acrylated epoxy prepared from an epoxy resin having a molecular weight of at least about 850, an amine terminated acrylated epoxy prepared from an epoxy resin having a molecular weight of at least about 850, an acrylated urethane, and mixtures thereof;

(B) up to about 35% of a solution of about 50 to about 80% end-blocked urethane and about 20 to about 50% monoacrylate;

(C) an amount up to about 43% sufficient to increase crosslinking of a solution of about 70 to about 90% acrylated hexamethoxymethyl melamine and about 10 to 30% monoacrylate;

(D) up to about 35% of a solution of about 80 to about 90% low molecular weight cresol formaldehyde resin and about 10 to about 20% monoacrylate;

(E) about 0.5 to about 5% of a UV photoinitiator; and

(F) about 0.2 to about 2% of a curing agent.

4,357,220

METHOD AND APPARATUS FOR RECOVERING CHARGED IONS FROM SOLUTION

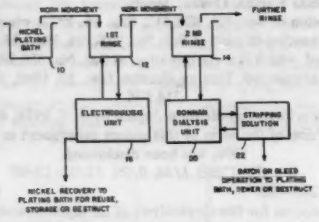
John L. Eisenmann, 13 Accord Pond Dr., Hingham, Mass. 02043

Filed Feb. 1, 1980, Ser. No. 117,620
Int. Cl.³ B01D *13/02, 57/02;* C25B *15/08*
U.S. Cl. 204—180 R 8 Claims

1. A process for treating rinse water from a plating line, said

plating line comprising a plating bath, a first rinse bath for rinsing work pieces which have been plated, and a second rinse bath for rinsing said workpieces after removal from said first rinse bath, said process comprising

(a) treating rinse water from said first rinse bath with an electrodialysis unit to remove charged ions carried from the plating bath to the first rinse bath;



(b) recirculating the rinse water from the first rinse bath through said electrodialysis unit to maintain the concentration of charged ions in the concentrated solution from said electrodialysis unit substantially equal to the concentration of said charged ions in said plating bath;

(c) returning said concentrated solution to said plating bath, and

(d) treating rinse water from said second rinse bath with a Donnan Dialysis unit.

4,357,221

PROCESS FOR COATING ELECTRICALLY CONDUCTIVE OBJECTS WITH POLYURETHANE

August Lehner, Roedersheim-Gronau; Juergen Gimpel, Ludwigshafen; Ingolf Buethe, Mannheim; Heinrich Hartmann, Limburgerhof, and Hans-Uwe Schenck, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,719

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1980, 3005034

Int. Cl.³ C24D *13/06*; C08G *69/46*

U.S. Cl. 204—181 R **11 Claims**

1. A process for coating electrically conductive objects comprising

A. immersing said object as the anode of an electric current in an aqueous polyurethane dispersion prepared by

(1) forming a polyurethane solution by reacting an organic polyisocyanate in the presence of an organic solvent with

(a) an acrylic ester diol having a molecular weight of between 146 and 3,000;

(b) an organic polyhydroxyl compound other than (a) having a molecular weight between 400 and 5,000 selected from the group consisting of polyester polyols, polyether polyols, polycarbonates, polylactones, and mixtures thereof; and

(c) optionally a chain extender selected from the group consisting of diols, triols, diamines, aminoalcohols, having a molecular weight between 62 and 400, water, and mixtures thereof;

(2) forming an anionic polyurethane addition product by reacting said polyurethane solution with a mercaptocarboxylic acid salt in the presence of a solvent;

(3) adding water; and

(4) removing the organic solvent, and

B. passing an electric current between the anode and a cathode which is also dispersed in said dispersion, and

C. irradiating said object with ultraviolet radiation or electron rays.

4,357,222

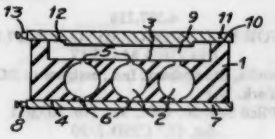
ELECTROLPHORETIC CASTING PROCESS

John W. Lucek, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Filed Aug. 5, 1981, Ser. No. 290,034

Int. Cl.³ C25D *1/14, 1/20*

U.S. Cl. 204—181 F **26 Claims**



1. An electrophoretic casting method comprising the steps of:

preparing a casting slip by mixing a liquid vehicle and an inorganic powder in such proportions that said casting slip has a viscosity of from 0.5 to 100,000 centipoises;

casting the slip into an electrophoretic mold set-up including a depository and a non-depository electrode, and wherein said depository electrode makes up less than the entire surface area of the shape defining element of the mold set-up;

applying a voltage between said electrodes thereby causing migration of the inorganic particles in said slip toward the depository electrode;

maintaining a potential until the desired degree of particle deposition has occurred;

terminating said potential;

removing the excess slip liquid;

removing the green casting from the mold set-up;

and firing the green casting.

4,357,223

OXYGEN SENSING DEVICE

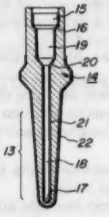
Shuichiro Oki, Aichi, and Syunzo Mase, Tobishima, both of Japan, assignors to NGK Insulators Ltd., Nagoya, Japan

Filed Jun. 12, 1980, Ser. No. 158,902

Claims priority, application Japan, Jun. 26, 1979, 54-86530[U]

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S **1 Claim**



1. An oxygen sensing device having a tubular solid electrolyte, said tubular solid electrolyte having an open end and a closed end, said open end having a metallic terminal attached thereto, said tubular solid electrolyte having electrodes on the outer and inner surfaces thereof, said inner electrode being connected with said metallic terminal through a flexible conductive material, the closed end side of the solid electrolyte being exposed to combustion gases exhausted from internal combustion engines, the inner electrode and outer electrode being contacted with ambient air and the combustion gases respectively, and oxygen partial pressure in the combustion gases being measured by utilizing the principle of an oxygen concentration cell, the inner surface of the tubular solid elec-

trolyte having a first diameter reducing portion connecting to a wide opening portion, which forms a portion leading out the inner electrode, an intermediate wide opening portion having a substantial uniform diameter smaller than that of the above described wide opening portion, a second diameter reducing portion connecting to the intermediate wide opening portion and a narrow opening portion, said narrow opening portion having a smaller diameter than the intermediate wide opening portion, which extends to the closed end, said wide opening portion, said first diameter reducing portion, said intermediate wide opening portion, said second diameter reducing portion and said narrow opening portion being arranged toward the closed end from the opening end side of the tubular solid electrolyte in said order, an average inner diameter of said narrow opening portion being not greater than 3 mm and wherein the flexible conducting material is graphite.

4,357,224

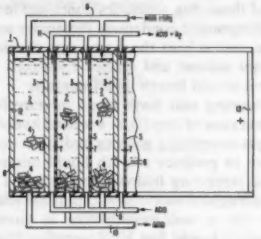
ENERGY EFFICIENT ELECTROLYZER FOR THE PRODUCTION OF HYDROGEN

Carl C. Hardman, Pittsburgh, and George R. Folser, Lower Burrell, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 7, 1981, Ser. No. 251,791

Int. Cl.³ C25B *9/00, 11/03, 11/04, 11/10*

U.S. Cl. 204—255 **15 Claims**



1. An electrolyzer for the production of hydrogen comprising:

(1) an inert container;

(2) a plurality of electrolytic cells within said container, each comprising

(A) the anode half of one inert impervious conducting bipolar plate and the facing cathode half of another inert impervious conducting bipolar plate;

(B) an inert conductive anode bed of porous activated carbon pellets of large surface area on said anode half of said bipolar plate, said anode bed being impregnated with an anolyte which comprises about 10 to about 60% aqueous sulfuric acid saturated with sulfur dioxide;

(C) a porous separator, between said anode bed and said cathode half; and

(D) a catholyte which comprises about 10 to about 60% aqueous sulfuric acid between said separator and said cathode half.

4,357,225

CATHODE BASE PLATE FOR ELECTROLYTIC REFINING

Satoshi Arita; Kiyomi Touge; Akio Shida, and Sigenobu Yamaura, all of Gifu, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 187,376

Claims priority, application Japan, Sep. 20, 1979, 54-130243[U]

Int. Cl.³ C25D *7/00, 1/20*

U.S. Cl. 204—281 **7 Claims**

1. A cathode base plate useful for the electrolytic refining of nonferrous metals, comprising an elongated, electroconductive plate having a central area adapted to receive an electrodeposited nonferrous metal layer on one or both sides thereof, said plate having vertical marginal side edge portions, the upper region of one of said side edge portions having a plurality of through holes arranged in a vertical row and at least one additional through hole horizontally offset from said vertical row of holes; a unitary member made of electrical insulating material mounted on said upper region, said member comprising layers covering the opposite surfaces and the edge of said upper region and including integral portions penetrating through and filling said through holes whereby said member is fixedly attached to said plate, said member having a height and width sufficient to permit a stripping means to be moved thereover to strip off said electrodeposited metal layer or layers from said plate.

4,357,226

ANODE OF DIMENSIONALLY STABLE OXIDE-CERAMIC INDIVIDUAL ELEMENTS

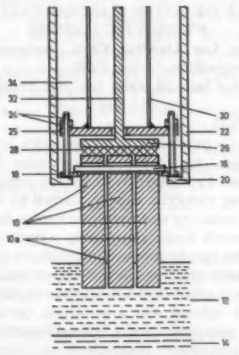
Hanspeter Alder, Flurlingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Dec. 12, 1980, Ser. No. 215,938

Claims priority, application Switzerland, Dec. 18, 1979, 11198/79; Fed. Rep. of Germany, Feb. 4, 1980, 3003922

Int. Cl.³ C25C *3/12, 7/02*

U.S. Cl. 204—286 **16 Claims**



1. Anode of a fusion electrolysis furnace for the production of aluminum, comprising a plurality of freely suspended individual oxide-ceramic elements of stable dimensions spaced from each other having a current exit surface and a current entry surface, wherein the individual elements have a linear cross-sectional dimension of 2–12 cm. at said current exit surface and have a length which corresponds to 2–20 times the value of the mean linear cross-sectional dimension, wherein said elements are arranged approximately parallel with a mean distance between outer surfaces of 1–20 mm., and are held together mechanically stably at the end facing the current entry with an electrically conductive supporting device situated outside the molten electrolyte wherein said electrically conductive supporting device is a presser plate electrically conductively connected with a supply conductor.

4,357,227

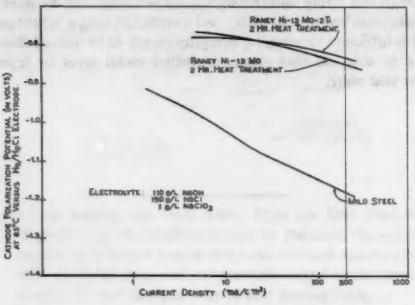
CATHODE FOR CHLOR-ALKALI CELLS

Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 80,745, Oct. 1, 1979, Pat. No. 4,289,650, which is a continuation-in-part of Ser. No. 25,153, Mar. 29, 1979, Pat. No. 4,240,895. This application Feb. 20, 1981, Ser. No. 236,479

Int. Cl.³ C25B *11/02, 11/06;* B01J *35/10*

U.S. Cl. 204—290 R 3 Claims


RANEY Ni-12 Mo-2 Ti
2 HR. HEAT TREATMENT
RANEY Ni-12 Mo
2 HR. HEAT TREATMENT
ELECTROLYTE: 110 g/L NaOH
150 g/L NaCl
1 g/L NaClO₃
MILD STEEL
CATHODE POLARIZATION POTENTIAL (in volts) AT 85°C VERSUS H_2/NaCl ELECTRODE
CURRENT DENSITY (ma/cm²)

1. An improved low overvoltage electrode for use as a hydrogen evolution cathode in an electrolytic cell, the electrode being of the type that has a Raney metal surface layer in electrical contact with a conductive metal core, wherein said improvement comprises: said Raney metal surface is predominantly derived from a monolithic structure having an integral adherent Ni-Mo-Ti-Al quaternary Beta phase intermetallic crystalline precursory outer portion of said metal core.

4,357,228

RECOVERY OF HYDROCARBON VALUES FROM PYROLYTIC VAPORS

Stanley C. Che, Los Alamitos, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Dec. 30, 1980, Ser. No. 221,672

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 R 15 Claims

1. A process for producing light aromatics, intermediate coal liquids, tar acids, and heavy hydrocarbons from pyrolytic vapors produced by the pyrolysis of coal comprising:

(a) condensing pyrolytic vapors, formed by the pyrolysis of coal, by contacting said pyrolytic vapors in a quench zone with a quench liquid comprising a hydrogen donor solvent, under predetermined conditions of temperature, time and ratio of quench liquid to pyrolytic vapors operative to form a first liquid mixture comprising said hydrogen donor solvent and a pyrolytic condensate formed from said pyrolytic vapors by condensation thereof, said pyrolytic condensate comprising tar acids and a condensate remainder;

(b) separating said first liquid mixture by vacuum flashing in a vacuum flashing zone into at least a first vapor comprising at least a major part of said tar acids, and a second liquid mixture comprising at least a major part of said quench liquid and said hydrogen donor solvent and also comprising at least a major part of said condensate remainder;

(c) hydrogenating said condensate remainder in said second liquid mixture in a first hydrogenation zone with said hydrogen donor solvent in said second liquid mixture by heating and holding said second liquid mixture under predetermined conditions of elevated temperature and time operative to transfer hydrogen from said hydrogen donor solvent to said condensate remainder in said second liquid mixture thereby forming a third liquid mixture comprising a spent hydrogen donor solvent, unused hydrogen donor solvent and a hydrogenated condensate remainder;

(d) separating said third liquid mixture from step (c) in a first separation zone into at least a heavy hydrocarbon raffinate comprising at least a major part of heavy hydrocarbons contained in said hydrogenated condensate remainder and a fourth liquid mixture comprising at least a major part of said spent hydrogen donor solvent, said unused hydrogen donor solvent, and a residue of said hydrogenated condensate remainder;

(e) condensing and separating said first vapor, from said vacuum flashing zone of step (b), in a second separation zone, into a fifth liquid mixture comprising at least a major part of said tar acids, and a sixth liquid mixture which comprises a tar acid raffinate;

(f) introducing said fourth liquid mixture from said first separation zone of step (d), and said sixth liquid mixture from said second separation zone of step (e), into a third separation zone and separating said fourth and sixth liquid mixtures into, and forming, at least a seventh liquid mixture comprising at least a major part of light aromatics contained in said residue of said hydrogenated condensate remainder and said tar acid raffinate, an eighth liquid mixture comprising at least a major part of intermediate coal liquids contained in said residue of said hydrogenated condensate remainder and said tar acid raffinate, and a ninth liquid mixture comprising at least a major part of two- and three-ring aromatics contained in said residue of said hydrogenated condensate remainder and said tar acid raffinate, and at least the major part of said spent hydrogen donor solvent and unused hydrogen donor solvent contained in said fourth liquid mixture;

(g) hydrotreating said ninth liquid mixture from said third separation zone of step (f), in a second hydrogenation zone with a gas comprising gaseous hydrogen under conditions operative to produce a tenth liquid mixture comprising two- and three-ring hydroaromatics and a hydrogenated spent hydrogen donor solvent, both of which are operative for use in said quench zone as quench liquid and subsequently in said first hydrogenation zone as hydrogen donor solvent, and unused hydrogen donor solvent; and

(h) utilizing said tenth liquid mixture from said second hydrogenation zone of step (g) as at least a major part of said quench liquid, which comprises a hydrogen donor solvent, used in said quench zone of step (a).

4,357,229

CATALYSTS AND HYDROCARBON TREATING PROCESSES UTILIZING THE SAME

Roby Bearden, Jr., and Clyde L. Aldridge, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 90,415, Nov. 1, 1979, Pat. No. 4,295,995, which is a continuation-in-part of Ser. No. 955,526, Oct. 30, 1978, Pat. No. 4,244,839, which is a continuation-in-part of Ser. No. 847,898, Nov. 2, 1977, Pat. No. 4,134,825. This application Mar. 23, 1981, Ser. No. 246,449

Int. Cl.³ C10G *1/06, 47/12, 45/04, 47/14*

U.S. Cl. 208—10 11 Claims

1. A hydrocarbon treating process which comprises contacting a hydrocarbonaceous oil feed at treating conditions with a catalyst comprising a composition comprising a metal component, carbon and hydrogen deposited on a support selected from the group consisting of solid metals and metal alloys of metals of Group IB, II, III, IV, VB, VIB, VIIB, VIII and mixtures thereof of the Periodic Table of Elements, said support having a surface area of less than about 5 square meters per gram, and the metal constituent of said metal component of said composition being selected from the group consisting of metals of Groups II, III, IV, V, VIB, VIIB, VIII and mixtures thereof of the Periodic Table of Elements, said composition having a surface area of at least about 50 m^2/g, said catalyst having been prepared by the steps which comprise:

(a) dispersing in a hydrocarbon oil having a Conradson carbon content up to about 50 weight percent, (1) a thermally decomposable metal compound in an amount sufficient to provide a ratio of atoms of oil Conradson carbon to atom of metal constituent of said thermally decomposable compound of less than about 750 to 1, said metal constituent being selected from the group consisting of Group II, Group III, Group IV, Group V, Group VIB, Group VIIB, Group VIII of the Periodic Table of Elements and mixtures thereof, and (2) said support;

(b) heating the resulting mixture in the presence of a gas selected from the group consisting of a hydrogen-containing gas, a hydrogen sulfide-containing gas and a gas comprising hydrogen and hydrogen sulfide, and

(c) recovering said supported catalyst.

4,357,230

EXTRACTION OF OIL USING AMIDES

Howard W. Sibley, Baldwinsville, and Joseph A. Bzdula, Fulton, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 25, 1980, Ser. No. 191,060
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **8 Claims**

1. In a process for extracting organic materials from oil shale or tar sand by contacting the same with an organic extractant, the improvement wherein said organic extractant is an aliphatic amide comprisng the moiety

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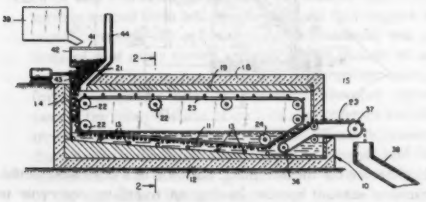
4,357,231

METHOD FOR EXTRACTING HYDROCARBONS FROM OIL SHALE

John H. Estes, Wappingers Falls, and Ernest P. Buinicky, Newburgh, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 153,112, May 23, 1980, abandoned. This application May 26, 1981, Ser. No. 267,200
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—11 R **5 Claims**



1. Method for extracting the hydrocarbon segment from shale rock which contains an amount of such hydrocarbon, which method includes the steps of.

providing a molten bath having a temperature within the range of about 900° to 1000° F. and comprised of a lead based metal,

contacting said shale rock having a size between about ¼ and 3 inches, with said molten bath for sufficient period of time to thermally release the hydrocarbon segment therefrom whereby the said hydrocarbon segment will rise to the bath surface

separating the floating liquified hydrocarbon from the surface of the molten bath prior to said liquid becoming vaporized, and

passing hot gas which is radiated from said molten bath, into heat exchange relation with said shale rock prior to contact of the latter with the molten bath.

4,357,232

METHOD FOR ENHANCING CATALYTIC ACTIVITY

Robert E. Holland, Mullica Hill, and Samuel A. Tabak, Wenonah, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,235
Int. Cl.³ C10G *67/06, 63/04*
U.S. Cl. 208—87 **8 Claims**

1. In a process for preparing a high quality lube base stock oil having a predetermined pour point in the range of about −25° to +30° F. from waxy crude oil, which process comprises:

extracting a distillate fraction that boils within the range of 450° to 1100° F. or a deasphalted short residuum fraction of said waxy crude with a solvent selective for aromatic hydrocarbons to yield a raffinate from which undesirable compounds have been removed;

contacting the raffinate and hydrogen gas with a dewaxing catalyst under dewaxing conditions effective to impart said predetermined pour point, said catalyst comprising a first crystalline zeolite having a dry crystal framework density of not less than about 1.6 grams per cubic centimeter and a constraint index of about 1 to about 12, thereby converting wax contained in the raffinate to lower boiling hydrocarbons; and,

topping the dewaxed raffinate to remove therefrom components of a low molecular weight; the improvement, whereby the resistance to oxidation of said dewaxed raffinate is increased, which comprises:

pretreating said raffinate, prior to dewaxing, with a sorbent comprising a second crystalline zeolite having an effective pore diameter equal to or larger than said first crystalline zeolite, said pretreating being conducted under a combination of conditions selected from a temperature of about 35° to about 350° F., a pressure of 0 to 3000 psig, and a contact time equivalent to a LHSV of 0.1 to 100 $hr.^{-1}$, said combination being effective to provide a pretreated raffinate characterized by an initial equilibrium temperature not exceeding about 675° to 700° F. and at least 25° F. lower than that obtained with said raffinate without pretreatment when dewaxed at about 1 LHSV; and dewaxing said raffinate at a temperature not to exceed the lesser of said equilibrium temperature of said raffinate without pretreatment minus 25° F., or 700° F.

4,357,233

CATALYTIC CONVERSION WITH ZEOLITE ZSM-39

Francis G. Dwyer, West Chester, Pa., and Edwin E. Jenkins, Woodstown, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 156,905, Jun. 6, 1981, Pat. No. 4,287,166, which is a continuation-in-part of Ser. No. 84,683, Oct. 15, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 254,698
Int. Cl.³ C10G *11/02, 35/06, 47/02*
U.S. Cl. 208—109 **11 Claims**

1. A proess for catalytic cracking of a hydrocarbon cracking stock, which process comprises contacting said cracking stock under catalytic cracking conditions with a catalyst comprising a catalytically active form of a porous zeolite having a composition, expressed in terms of moles of anhydrous oxides, per 100 moles of silica, as follows:

$$(0\text{-}2.5)M_{2/n}O:(0\text{-}2.5)Al_2O_3:(100)SiO_2$$

wherein M is at least one cation having a valence n, and wherein said zeolite is characterized by a characteristic X-ray diffraction pattern as set forth in Table 1 of the specification.

4. A process for the catalytic reforming of a reforming stock, which process comprises contacting said reforming stock

under catalytic reforming conditions with a catalyst comprising a hydrogenation component and a catalytically active form of a porous zeolite having a composition, expressed in terms of moles of anhydrous oxides, per 100 moles of silica, as follows:

$$(0\text{-}2.5)M_{2/n}O:(0\text{-}2.5)Al_2O_3:(100)SiO_2$$

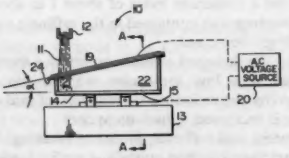
wherein M is at least one cation having a valence n, and wherein said zeolite is characterized by a chracteristic X-ray diffraction pattern as set forth in Table 1 of the specification.

4,357,234

ALTERNATING POTENTIAL ELECTROSTATIC SEPARATOR OF PARTICLES WITH DIFFERENT PHYSICAL PROPERTIES

Ion I. Inculet, and Yuji Murata, both of London, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed May 18, 1981, Ser. No. 264,598
Int. Cl.³ B03C 7/04
U.S. Cl. 209—127 B **16 Claims**



1. A method of separating particles having different physical properties comprising:

charging the particles;

driving the particles in a forward direction through an alternating electric field of non-uniform intensity in a direction perpendicular to the forward direction and having field lines curved in the perpendicular direction whereby the particles are subjected to a centrifugal force in the perpendicular direction, the centrifugal force on each particle being dependent on the mass, size and electric charge of the particle whereby different particles are separated along the perpendicular direction.

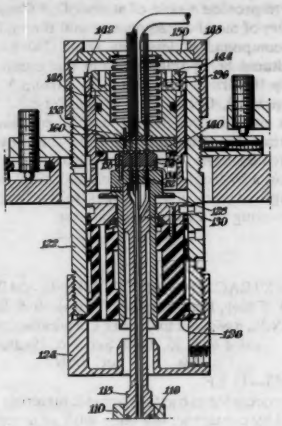
4,357,235

DRIVE FOR ROTATING SEAL

Charles H. Dilks, Jr., Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 29, 1980, Ser. No. 125,854
Int. Cl.³ B03B 5/00
U.S. Cl. 209—155 **2 Claims**

1. An apparatus for separating particulates suspended in a fluid medium according to their effective masses, said apparatus having a housing, an annular cylindrical channel with a cylinder axis, rotor means mounted in said housing for rotating said channel about said axis, pump means and a rotating seal for passing said fluid medium circumferentially through said channel, means for introducing said particulates into said medium for passage through said channel and means connected to the effluent of said channel for detecting the presence of said particulates, the improvement wherein said rotating seal means is supported on said rotor means by a flexible shaft, said flexible shaft being selected of a plastic material having a stiffness sufficient to drive said rotating seal and a flexibility sufficient to substantially decouple said rotating seal from vibrations of said rotor, the ratio of the modulus of elasticity to the tensile



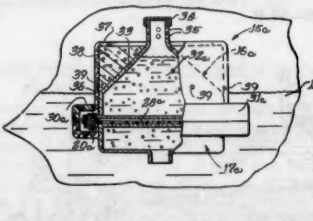
strength of said plastic material being about 30, thereby to transmit torque to said rotating seal.

4,357,236

AUTOMATIC ADDITION OF A CORROSION INHIBITOR TO A COOLANT SYSTEM BY OSMOTIC PRESSURE

Robert H. Krueger, Palatine, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 17, 1979, Ser. No. 39,995
Int. Cl.³ B01D 31/00
U.S. Cl. 210—167 **12 Claims**



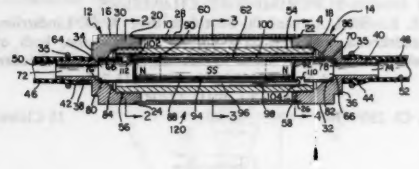
1. A device for the automatic addition of a corrosion inhibitor into a coolant system having an overflow reservoir to protect a heat exchanger subject to corrosion, comprising a container for a concentrated corrosion inhibitor solution having an overflow tube at the upper end and an opening into the lower end of the container to allow entry of the coolant therein, a semi-permeable osmotic membrane located in said container separating the corrosion inhibitor solution from the inhibited coolant, and means encompassing at least a portion of the container to cause it to float in the coolant with the overflow tube above the level of the coolant, the osmotic pressure of the corrosion inhibitor solution being equal to that of the inhibited coolant but less than the osmotic pressure of inhibitor depleted coolant to cause water to pass through the membrane into the corrosion inhibitor solution to force solution from the overflow tube into the body of coolant in the reservoir when there is a difference in osmotic pressures.

4,357,237

DEVICE FOR THE MAGNETIC TREATMENT OF WATER AND LIQUID AND GASEOUS FUELS

Charles H. Sanderson, 3717 Fritcha Ave., Fort Wayne, Ind. 46806

Continuation-in-part of Ser. No. 98,294, Nov. 28, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 167,921
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—222 12 Claims



1. A device for the magnetic treatment of fluids such as water and liquid and gaseous fuels comprising:

an elongated, tubular intermediate casing of magnetic material,

an elongated magnet having opposite ends and at least two axially spaced poles,

an inner casing of non-magnetic material encasing said magnet, said inner casing having a cylindrical outer surface and including open tubular end portions extending beyond opposite ends of said magnet and having inner and outer surfaces extending longitudinally with respect thereto,

said inner casing and magnet being positioned longitudinally within said intermediate casing, the end portions of said inner casing being smaller in diameter than the inner diameter of said intermediate casing and being slidable out of said intermediate casing when the device is disassembled,

a pair of end fittings threadedly connected to opposite ends of said intermediate casing, said fittings including externally open fluid passages therein,

each of said end fittings including a recess having an inner surface spaced from and opening toward said magnet, said recesses having the respective opposite tubular end portions of said inner casing slidably seated therein so as to space said inner casing from said intermediate casing to form a generally annular treatment chamber therebetween, the inner surface of each of said recesses including tapered surface means such that the recess decreases in diameter in a direction away from the magnet and has a maximum inner diameter greater than the outer diameter of the end of the inner casing seated therein and a minimum inner diameter smaller than the outer diameter of the end of the inner casing seated therein, and the respective tubular end portion is seated directly against the inner surface of the recess and supported against radial movement by the inner surface of the recess,

said tapered surface means providing a greater radial inward tapering force than an axial compression force for gradually tapering inwardly the end portions and snugly supporting them in the recesses as the end fittings are threaded on said intermediate casing,

said recesses being in fluid communication with the fluid passages of the respective end fittings, and

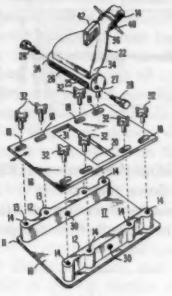
apertures in each of said tubular end portions providing fluid flow paths from within the tubular end portions to said treatment chamber.

4,357,238

SUBMERGED INLET HEAD FOR FIRE HOSES AND THE LIKE

Theodore Ziaylek, Jr., 140 Riverview Dr., Yardley, Pa. 19067

Filed Feb. 24, 1981, Ser. No. 238,242
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—232 13 Claims



1. An intake head for a hose, said head being of the suction type and being adapted for submergence within a water supply tank having a generally horizontal bottom, comprising:

(a) a base adapted to rest on the bottom of the tank;

(b) a hose connector member mounted on the base for rockable movement to selected positions of angular adjustment in respect to the tank bottom, said member having an inlet and having an outlet connectable to a hose;

(c) a retainer plate mounted on the base for back-and-forth sliding movement and cooperating therewith in defining an inlet chamber through which water may pass to the hose connector member inlet, said plate having an opening snugly receiving the hose connector member while leaving the same free for said rockable adjustment concurrently with said back-and-forth sliding movement of the retainer plate; and

(d) means for locking the retainer plate against movement in respect to the base in each position to which the retainer plate is moved, said retainer plate when locked in position being disposed with at least one edge thereo presenting an abutment engaging the hose connector member against movement from its selected position of angular adjustment.

4. An intake head for a hose as in claim 1 further including screen means on the hose connector member adapted to prevent entry of debris into the hose connector member.

4,357,239

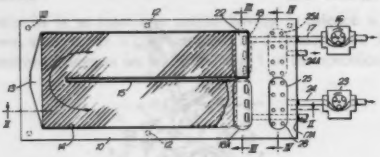
TRANSFER MEMBRANE APPARATUS

Brian J. Bellhouse, The Lodge, North St., Islip, Oxfordshire, and William S. Haworth, Redding Wyck House, Market St., Charlbury, Oxfordshire, both of England

PCT No. PCT/GB79/00199, § 371 Date Jun. 12, 1980, § 102(e) Date Jun. 12, 1980, PCT Pub. No. WO80/01042, PCT Pub. Date May 29, 1980
PCT Filed Nov. 21, 1979, Ser. No. 206,544
Claims priority, application United Kingdom, Nov. 22, 1978, 45577/78
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.3 11 Claims

1. Apparatus for effecting transfer of heat or mass between two fluids through a transfer membrane, the apparatus comprising two conduits separated by a common wall formed by the membrane, a pumping means for pumping the two liquids with a mean counter current flow each through a respective one of the two conduits, characterised in that the pumping means (16,20,23,27) is also arranged to apply to both fluids in

the conduits (34,35) in phase and in the same direction a superimposed pulsatile flow, a transverse dimension of a first one of the conduits varying, either inherently or in response to pressure of fluid therein, in a regularly repeating manner in the direction of the pulsatile flow component, to provide a multi-



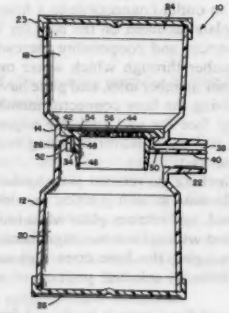
plicity of hollows (36) in the membrane (33) such that pulsation of fluid past the hollows gives rise in the hollows to a rotary flow having components of motion parallel and perpendicular to the direction of the pulsatile flow component in that conduit and to the membrane wall (33).

4,357,240

DISPOSABLE, ONE-PIECE FILTER UNIT

Ravinder C. Mehra, Fairport; Heinz W. Hahn, Rochester, and Raj K. Aggarwal, Penfield, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,818
Int. Cl.³ B01D *23/02*
U.S. Cl. 210—455 10 Claims



10. A disposable filtration unit comprising:

(a) a container having an upright wall, an open top and closed bottom;

(b) a shoulder extending inward from about the internal surface of said wall intermediate the top and bottom thereof for dividing said container into an upper reservoir for receiving the liquid to be filtered and a lower receptacle for receiving filtrate;

(c) a flange depending from said shoulder and defining a first opening, the lower portion of said flange extending radially inward to define a second opening axially aligned with said first opening;

(d) a spout formed integral said cylindrical wall, said spout including a partition which extends axially back through said spout to said depending flange, said partition dividing said spout into a lower passage which communicates with said receptacle and an upper passage which opens through said flange;

(e) a filter membrane support plate sealed about its periphery to said shoulder;

(f) an annular collar depending from said support plate and extending into said receptacle,

said collar having a clearance fit with said first opening as defined by said flange and an interference fit with said second opening as defined by said lower flange portion;

(g) said collar and flange defining a space therebetween extending about said collar and communicating with said upper passage; and

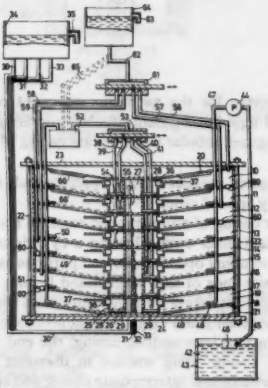
(h) said flange having an opening to said receptacle whereby air passing into said upper passage and into said space about said collar can enter said receptacle.

4,357,241

BATCHWISE GRAVITATIONAL SEPARATION OF AN EMULSION USING PLURAL VERTICALLY SUPERIMPOSED CHAMBERS

Ib H. Knudsen, Alexandria, Scotland; Bror A. O. Lindström, Landskrona, and Nils-Eric Carlsson, Marieholm, both of Sweden, assignors to Supra Aktiebolag, Landskrona, Sweden

Filed Nov. 28, 1980, Ser. No. 211,245
Int. Cl.³ B01D *17/04*
U.S. Cl. 210—708 15 Claims



1. A method of separating an emulsion comprising a heavier liquid and a lighter liquid, using a plurality of closed, liquid-filled vertically arrayed separation chambers having a horizontal extension larger than their vertical extension, and each of which has a lower outlet for the separated heavier liquid, an upper outlet for the separated lighter liquid, and an inlet for emulsion located at a substantial flow-distance from the said two outlets, whereat the separation chambers are kept at an overpressure by causing the heavier and lighter liquids separated gravitationally during the actual separation process to depart from said chambers via a respective one of two pressure-holding vessels containing lighter liquid and a supply of heavier liquid, respectively, and having a weir so located above the uppermost part of the uppermost separation chamber that with the pressure-holding vessels communicating with each other through at least one of the separation chambers equilibrium will occur in the thus formed U-pipe system only when separated lighter liquid is not present beneath the outlet for lighter liquid of the uppermost separation chamber, wherein the emulsion is fed batchwise into at least one separation chamber at a time, at a temperature greater than the temperature of the liquid already present in said at least one separation chamber and in a volumetric quantity which is less than the volume of said at least one separation chamber, and wherein during the introduction of the emulsion into said at least one separation chamber the lighter-liquid outlet of said at least one separation chamber is held closed and the heavier-liquid outlet is held open so that the emulsion charged to said at least one separation chamber displaces a corresponding amount of solely heavier liquid from said at least one separation chamber, and wherein the emulsion inlet of said at least

one separation chamber is then closed and the lighter-liquid outlet thereof opened so that lighter liquid separated in said at least one separation chamber from said emulsion during the separation process is forced through said lighter-liquid outlet, by a corresponding amount of separated heavier liquid flowing from the pressure-holding vessel containing said supply of heavier liquid back into said at least one separation chamber.

4,357,242

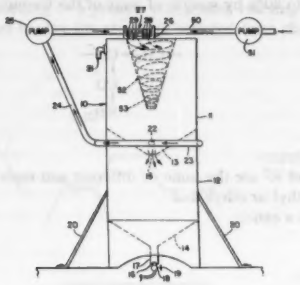
WATER PURIFICATION METHOD AND APPARATUS

Charles R. Chandler, Alexandria, Va., assignor to Chandler Associates, Inc., Alexandria, Va.

Continuation of Ser. No. 117,512, Feb. 1, 1980, abandoned. This application May 8, 1981, Ser. No. 261,967

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—712 **4 Claims**



1. A method for purifying water containing dissolved salts and colloids as the contaminants in a device which is subdivided into three treatment zones in vertical alignment comprising:

(a) introducing the water to be purified into the top portion of a first zone including a downwardly depending cone configuration effective for setting up a whirlpool of said water in said first zone;

(b) injecting a concentrated solution of flocculating agent into the top of the whirlpool to form a floc consisting of said flocculating agent and dissolved salts and colloids adhering to the flocculating agent;

(c) drawing down the water and concentrated solution of the flocculating agent and formed floc from the bottom of the cone shaped first zone into a second zone which surrounds said first zone and has a downwardly depending cone portion configuration; the top of said first zone being on the same level as the top of said second zone;

(d) withdrawing a portion of the treated water from the top of the second zone;

(e) drawing the remainder of the water and concentrated solution of flocculating agent and formed floc from the bottom of the cone shaped portion of the second zone into a third zone which is confined by means below said second zone terminating in a bottom having a downwardly depending cone portion configuration;

(f) withdrawing radially a portion of the treated water from near the top portion of the third zone and introducing this water tangentially into the whirlpool of the first zone for further treatment;

(g) withdrawing floc and a quantity of water from the bottom of the third zone;

(h) controlling the rate of introduction of to-be-treated water and concentrated solution of flocculating agent and the withdrawal of treated water and floc to direct said floc downwardly from said first zone to the bottom of said third zone.

4. An apparatus for purifying water containing dissolved salts and colloids as the contaminants comprising:

(a) a vertically disposed cylindrical vessel having a top portion and a bottom portion;

(b) said vessel being subdivided by a downwardly depending cone shaped wall to define an upper chamber and a lower chamber;

(c) the said cone shaped wall having an opening centrally therethrough to provide communication between said upper chamber and said lower chamber;

(d) said upper chamber having positioned therein concentrically and vertically displaced from the said cone shaped wall a downwardly dependent cone shaped vessel;

(e) said cone shaped vessel having an opening centrally at the bottom of the cone shaped vessel for communication between said upper chamber and internally of said cone shaped vessel and said cone shaped vessel being dimensioned to terminate substantially on the same horizontal plane as the top portion of the cylindrical vessel;

(f) a first means to introduce said water tangentially to the top portion of said cone shaped vessel and for injecting a flocculating agent into said water;

(g) a second means to remove radially water from the top portion of said lower chamber and to introduce such water tangentially of the top portion of said cone shaped vessel;

(h) said cylindrical vessel and said lower chamber terminating in a downwardly depending cone shaped wall having centrally disposed a port means for removing floc including dissolved salts and colloids communicating internally with said lower chamber;

(i) said upper portion of said cylindrical vessel and upper portion of said upper chamber having overflow port means adapted and constructed to remove purified water from said upper chamber.

4,357,243

METAL-WORKING EMULSION RECLAIMING PROCESS

John F. Dobrez, Flossmoor, and Jose T. Jacob, Lake Zurich, both of Ill., assignors to Dober Chemical Corporation, Midlothian, Ill.

Filed Nov. 17, 1980, Ser. No. 207,232

Int. Cl.³ C10M *11/00*

U.S. Cl. 210—752 **16 Claims**

1. A method for reclaiming an aqueous emulsion contaminated with particles of at least one metal selected from the group consisting of aluminum, iron, tin, and mixtures thereof, which contaminated emulsion includes about 40% to about 99.5% by volume of water and in the uncontaminated state is useful as a metal-working lubricant, said method comprising contacting said contaminated emulsion with at least one added basic material at metal solubilizing conditions including a temperature in the range of about 60° F. to about 180° F. and a pH of the aqueous portion of said contaminated emulsion in the range of about 9 to about 13.5 for a period of time not greater than about 2 hours to solubilize at least a portion of said metal particles, and contacting said emulsion with at least one acidic material to adjust the pH of said emulsion to a level so that said emulsion is suitable for use as said metal-working lubricant.

4,357,244

METHOD FOR REMOVING SUSPENDED SOLIDS FROM A LIQUID

Phillip R. Bose, Pleasant Hill, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 128,202, Mar. 7, 1980, abandoned, which is a continuation of Ser. No. 945,756, Sep. 25, 1978, abandoned. This application Feb. 4, 1981, Ser. No. 231,531

Int. Cl.³ B01D *21/08*

U.S. Cl. 210—801 **3 Claims**

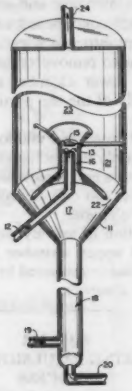
1. A method for separating a clarified liquid hydrocarbonaceous oil and an agglomeration agent from a slurry of said

liquid hydrocarbonaceous oil and finely divided suspended solids wherein said slurry is charged to a settling zone and held there to allow said solids to agglomerate and separate by gravitation, a clarified and essentially solids-free liquid comprising said hydrocarbonaceous oil and said agglomerating agent is recovered from an upper portion of said settling zone, and settled agglomerated solids are withdrawn from a lower portion of said vessel, wherein the improvement comprises:

(1) discharging said slurry upwardly into a mixing zone within an intermediate or upper portion of said vessel;

(2) forming within said mixing zone a mixture of said slurry with a downflowing recirculated liquid stream comprising said hydrocarbonaceous oil and said agglomerating agent;

(3) forming from said mixture a first portion of agglomerated solids of a size large enough to settle by gravitation and a partially settled liquid by circulating said mixture downwardly into a separating zone positioned below said mixing zone and separating said first agglomerate portion from said mixture by gravitation;



(4) forming from said partially settled liquid a second portion of agglomerated solids of a size large enough to settle by gravitation and a further settled liquid by circulating at least a portion of said partially settled liquid upwardly through a quiet zone horizontally surrounding said mixing zone and there separating said second agglomerate portion from said further settled liquid by gravitation;

(5) providing at least a portion of said recirculated liquid stream by circulating at least a portion of said further settled liquid from said quiet zone into said mixing zone;

(6) circulating to said settling zone a portion of at least one of the following:

said partially settled liquid from said separating zone and said further settled liquid from said quiet zone.

4,357,245

WATER-SOLUBLE COPOLYMER AND ITS PREPARATION

Friedrich Engelhardt; Ulrich Riegel, both of Frankfurt am Main; Martin Hille, Liederbach, and Heinz Wittkus, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 174,731, Aug. 1, 1980, Pat. No. 4,309,523. This application Aug. 28, 1981, Ser. No. 297,237

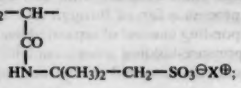
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1979, 2931897

Int. Cl.³ C09K *7/02*

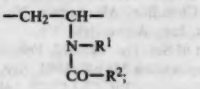
U.S. Cl. 252—8.5 C **2 Claims**

1. An aqueous drilling mud containing 0.5 to 40 kg/m^3 of a water-soluble copolymer consisting essentially of a random distribution of

(a) 5 to 95% by weight of units of the formula

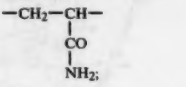


(b) 5 to 95% by weight of units of the formula



and

(c) 0 to 80% by weight of units of the formula



wherein

R^1 and R^2 are the same or different and each is hydrogen, methyl or ethyl; and

$X^{\oplus}$ is a cation.

4,357,246

CARBOALKOXY ALKYL NORBORNANES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

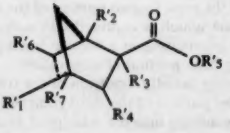
Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 206,466, Nov. 13, 1980, Pat. No. 4,312,888, which is a continuation-in-part of Ser. No. 133,870, Mar. 25, 1980, Pat. No. 4,319,036. This application Sep. 17, 1981, Ser. No. 303,162

Int. Cl.³ D06M *13/18*

U.S. Cl. 252—8.6 **2 Claims**

1. A fabric softener composition comprising a fabric softener base and intimately admixed therewith an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond; R_1', R_2', R_3', R_4', R_6', and R_7' are each selected from the group consisting of hydrogen and methyl and R_5' is C_1–C_4 alkyl with the provisos that:

1. one of R_1', R_2', R_6' and R_7' is methyl and the other of R_1', R_2', R_6' and R_7' represents hydrogen;
2. R_3' and R_4' are not both methyl;
3. when the dashed line is a carbon-carbon double bond, R_1', R_3' and R_4' are not all hydrogen when R_2' is methyl.

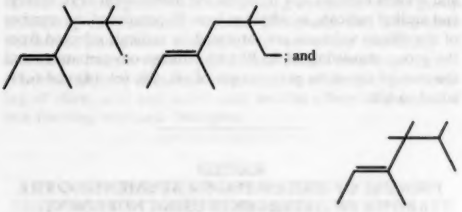
4,357,247

ALIPHATIC C_{11} BRANCHED CHAIN ALDEHYDES AND ALCOHOLS, PROCESS FOR PREPARING SAME AND USES THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES, COLOGNES AND/OR PERFUMED ARTICLES

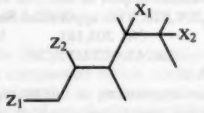
Richard M. Boden, Monmouth Beach, and John H. Geiger, Jr., Lakewood, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 233,681, Feb. 12, 1981, Pat. No. 4,304,689. This application Sep. 25, 1981, Ser. No. 305,532
Int. Cl.³ A61K 7/46; C11B 9/00; D06M 13/00, 13/46
U.S. Cl. 252—8.8 2 Claims

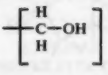
1. A process for augmenting or enhancing the aroma of a fabric softener composition or a fabric softener article comprising the step of intimately admixing with a fabric softener composition base or with a component of a fabric softener article an aroma augmenting or enhancing quantity of a product produced according to a process comprising reacting at least one compound having the structure selected from the group consisting of:



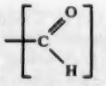
with a mixture of carbon monoxide and hydrogen at elevated temperatures and pressures thereby producing at least one compound defined according to the structure:



wherein one of X_1 or X_2 is hydrogen and the other of X_1 or X_2 is methyl; and wherein one of Z_1 or Z_2 is hydrogen and the other of Z_1 or Z_2 is hydroxymethyl having the structure:



or carboxaldehyde having the structure:



4,357,248

TREATING WELLS WITH SELF-PRECIPITATING SCALE INHIBITOR

David C. Berkshire; Jimmie B. Lawson, and Edwin A. Richardson, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 150,382, May 16, 1980, abandoned. This application Apr. 21, 1981, Ser. No. 256,177
Int. Cl.³ C02F 5/14; E21B 43/25
U.S. Cl. 252—8.55 B 4 Claims

1. A process for emplacing a scale inhibitor within a subterranean reservoir comprising:

dissolving at least one component each of (1) an anionic scale inhibitor that is a nitrogen-containing phosphonate which is (a) capable of preventing scaling by fluid produced from the reservoir at the reservoir temperature when present in the aqueous phase of the produced fluid in a relatively low but effective concentration, and (b) forms multivalent cation salts of multivalent cations which salts have a water solubility that is significantly less at a pH below about 10 than at a pH of from about 10 to 14, (2) a multivalent cation salt and (3) an alkaline compound in an aqueous liquid to provide a scale inhibitor solution containing scale inhibiting anions and multivalent cations which are mutually soluble at a relatively high pH but which, at a lower pH and the reservoir temperature, are precipitated as a scale inhibiting compound of relatively low water solubility;

also dissolving within the scale inhibitor solution at least one water-soluble ester or amide of a water-soluble acid which hydrolyzes at a relatively slow rate to reduce the pH of the solution;

wherein the rate at which the pH of the inhibitor solution is reduced, is controlled by selection of the particular pH reducing agent and scale inhibiting agent or the concentration of said pH reducing agent or scale inhibiting agent and/or by further dissolving in said scale inhibiting solution a buffering system;

said rate of the pH reduction -being correlated- with the temperature and injectivity properties of the well and reservoir so that (a) a selected volume of the inhibitor-containing solution can be injected into the reservoir before the occurrence of any significant amount of precipitation and (b) a significant amount of precipitation will occur within a few hours after that injection; and,

injecting the inhibitor solution into the reservoir before the occurrence of a significant amount of precipitation at a rate such that a significant amount of said scale inhibiting compound of relatively low water solubility is precipitated near the borehole of the well.

4,357,249

SELF-LUBRICATING BEARING AND THE LIKE, AND METHOD OF MAKING SAME

H. Clay Mellor, Wilmington, Del., assignor to Arguto, Inc., Aston, Pa.

Filed Sep. 11, 1980, Ser. No. 186,312
Int. Cl.³ C10M 5/10
U.S. Cl. 252—12 25 Claims

1. A composition particularly suitable for being molded into structural members which are dimensionally stable and have a low coefficient of friction comprising a substantially homogeneous blend of from about 70% to about 95% of a substantially linear ultra high molecular weight ethylene polymer, and from about 5% to about 30% of a normally solid lubricant selected from the group consisting of waxes, fats and mixtures thereof, and mixtures of one or both of said lubricants with a grease, said percentages being by weight based on the total weight of the composition.

4,357,250

NITROGEN-CONTAINING TERPOLYMER-BASED COMPOSITIONS USEFUL AS MULTI-PURPOSE LUBRICANT ADDITIVES

Katsumi Hayashi, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 896,864, Apr. 17, 1978, Pat. No. 4,320,019. This application Aug. 21, 1981, Ser. No. 294,869

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—51.5 A 30 Claims

1. A method for preparing an oil-soluble composition which comprises the steps of:

(I) preparing an ene reaction intermediate by reacting, in the absence of free radical initiators,

(A) at least one olefinic carboxylic acid or derivative thereof with

(B) at least one interpolymer containing

(1) about 10 to about 90 mole percent ethylene units,

(2) about 5 to about 70 mole percent of units derived from at least one C_{3-8} α-monoolefin, and

(3) about 0.1 to about 20 mole percent of units derived from at least one of non-conjugated dienes and trienes,

said interpolymer having an inherent viscosity of at least about 0.3 as measured at 30° C. on a 0.1% by weight solution in carbon tetrachloride; and

(II) reacting said ene reaction intermediate with

(C) at least one monoamine containing one and only one acylatable moiety per molecule, said acylatable moiety being a primary or secondary amine group; and

(D) at least one polyamine containing two or more acylatable moieties;

at least about 70% by weight of the total amines present comprising reagent C.

4,357,251

METHOD OF CERAMIC PREPARATION

David W. Johnson, Jr., Pluckemin, and Man F. Yan, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 7, 1977, Ser. No. 849,101

Int. Cl.³ C04B *35/30, 35/38, 35/40, 35/64*

U.S. Cl. 252—62.57 15 Claims

1. A method of producing a ceramic material of final specified composition having desired characteristics, said material having at least two cations, comprising:

mixing a first particle composition and a second particle composition, said first and said second particle compositions having different compositions, said first and said second particle compositions forming said final specified composition, and

sintering said first and said second particle composition characterized in that said first particle composition forms at least 0.2 weight percent of said final specified composition and has an approximately eutectic composition and has at least two cations of said final composition in relative amounts differing from the relative amounts of said cations in said final specified composition in which the melting temperature of said first particle composition is lower than the melting temperature of said final specified composition, and in which said second particle composition contains at least one cation of said final specified composition whereby said final specified composition is produced under expedited sintering conditions without deviation from said desired characteristics of said final composition.

4,357,252

SILOXANE BREAK FLUID COMPOSITIONS CONTAINING $R'SiO_{\frac{3}{2}}$ UNITS

Peter Huber, Burghausen, and Jürgen Meusel, Burgkirchen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 290,762

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039736

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—78.3 5 Claims

1. A brake fluid containing an organopolysiloxane having

(a) from 30 to 98 mole percent of units of the formula R_2SiO,

(b) from 0.5 to 20 mole percent of units of the formula $R'SiO_{3/2}$,

(c) from 0.1 to 20 mole percent of units of the formula $R_3SiO_{\frac{1}{2}}$,

(d) from 0 to 20 mole percent of units of the formula $RSiO_{3/2}$ and

(e) from 0 to 10 mole percent of units of the formula $R'SiO$,

in which R is selected from the group consisting of monovalent, aliphatic hydrocarbon radicals, halogenated monovalent aliphatic hydrocarbon radicals and cyanoalkyl radicals, R′ is selected from the group consisting of monovalent aryl, alkaryl and aralkyl radicals and halogenated monovalent aryl, alkaryl and aralkyl radicals, in which at least 99 percent of the number of the silicon valences are saturated by radicals selected from the group consisting of R, R′ and siloxane oxygen atoms and the sum of the mole percentages of (a), (b), (c), (d) and (e) is equal to 100.

4,357,253

PROCESS OF ENHANCING OR AUGMENTING THE AROMA OF DETERGENTS USING NORBORNYL ESTERS

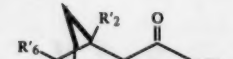
Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 206,466, Nov. 13, 1980, Pat. No. 4,312,888, which is a continuation-in-part of Ser. No. 133,870, Mar. 25, 1980, Pat. No. 4,309,026. This application Sep. 17, 1981, Ser. No. 303,161

Int. Cl.³ C11D *3/50*

U.S. Cl. 252—174.11 1 Claim

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, non-ionic, cationic or zwitterionic detergent base at least one compound defined according to the generic structure:



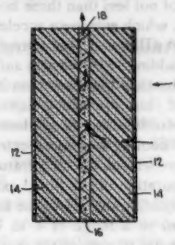
wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond; R_1', R_2', R_3', R_4', R_6' and R_7' are each selected from the group consisting of hydrogen and methyl and R_5' is a C_1–C_4 alkyl moiety with the provisos that:

1. one of R_1', R_2', R_6' and R_7' is methyl and the other of R_1', R_2', R_6' and R_7' represents hydrogen;
2. R_3' and R_4' are not both methyl;
3. when the dashed line is a carbon-carbon double bond, R_1', R_3' and R_4' are not all hydrogen when R_2' is methyl.

4,357,254
CLEANING COMPOSITION

Anita G. Kapiloff, Treasure Island, Fla., and Randolph T. Hatch, Silver Spring, Md., assignors to Chemical Sciences, Inc., Beltsville, Md.

Filed Jan. 12, 1981, Ser. No. 224,011
Int. Cl.³ C02B 5/04
U.S. Cl. 252—181 **9 Claims**



1. A composition for cleaning solid surfaces which are fouled with inorganic scale, comprising a member of the group consisting of monobasic sodium phosphate and monobasic potassium phosphate, a member of the group consisting of dibasic sodium phosphate and dibasic potassium phosphate, an effective amount of at least one member of the group consisting of citric acid and malic acid, and an effective amount of non-foaming nonionic detergent.

4,357,255
PROCESS FOR THE PREPARATION OF LIQUID MIXTURES OF COMPOUNDS HAVING ISOCYANATE GROUPS

Ingo Stemmler, Odenthal; Hanns-Peter Müller, Odenthal-Blecher, and Kuno Wagner, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 26, 1981, Ser. No. 296,391
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033330
Int. Cl.³ C08G 18/82; C07C 119/042
U.S. Cl. 252—182 **6 Claims**

1. A process for the production of a mixture of isocyanate group containing compounds which mixture is liquid at room temperature and is suitable as an isocyanate component in the production of polyurethane plastic materials comprising reacting at a temperature between 100° and 250° C.

(a) up to 70 parts by weight polyurethane with,
(b) 100 parts by weight polyisocyanate having a melting or softening point below 50° C. in the presence of
(c) a catalytic quantity of a compound selected from acid and neutral salts, phenolates, enolates, and alcoholates of a metal of the 3rd, 4th, or 5th Main Group or 1st, 2nd, 4th, 7th or 8th subgroups of the Periodic System of elements.

4,357,256
SODIUM HYDROSULFITE COMPOSITION

Takaaki Yamaguchi, Tokyo, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 7, 1980, Ser. No. 128,098
Claims priority, application Japan, Mar. 13, 1979, 54-29186
Int. Cl.³ C09K 3/00
U.S. Cl. 252—188.24 **6 Claims**

1. A bleaching sodium hydrosulfite composition which minimizes H_2S generation in use and which comprises sodium hydrosulfite, 3 to 15% by weight of hexamethylenetetramine and 5 to 15% by weight of a water-soluble sulfite selected from the group consisting of sodium sulfite, ammonium sulfite and potassium sulfite.

4,357,257
LOW VISCOSITY SLURRY AND METHOD OF PREPARING SAME

Yulin Wu, and Ernest A. Znech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 6, 1978, Ser. No. 894,069
Int. Cl.³ B01J 13/00
U.S. Cl. 252—308 **18 Claims**

1. A method of preparing a relatively low viscosity slurry comprising:

(a) providing a material which forms a relatively high viscosity slurry of thin plate-shaped individual crystals when a dilute aqueous solution thereof is mixed with a dispersant in which said material is insoluble and to which said material is inert, and water is evaporated therefrom;
(b) preparing a powder of granular shaped particles of said material; and
(c) mixing directly with said dispersant said powder of granular shaped particles so that the thus produced slurry has a lower viscosity than a slurry comprising said dispersant with an equal weight percent of said material wherein said material is essentially in the form of individual plate-shaped crystals having a larger size than particles of said powder.

13. A slurry having a relatively low viscosity comprising a powder of granular shaped particles in the size range of about 50 mesh to about 140 mesh mixed with a dispersant in which said powder is insoluble and to which said powder is inert, the material of which said powder is formed being an organic acid salt having the formula

$$R\left(-\overset{\overset{O}{\|}}{C}-OM\right)_n$$

wherein R is an aromatic hydrocarbon radical having 6 to about 35 carbon atoms, M is selected from the group consisting of an alkali and an alkaline earth metal, an n is an integer selected from the group consisting of 1, 2, 3 and 4, the viscosity of said slurry being less than the viscosity of a slurry comprising said dispersant with an equal weight percent of said material wherein said material is essentially in the form of individual plate-shaped crystals having a larger size than particles of said powder.

4,357,258
STABLE EMULSIONS OF P-HYDROXYBENZOIC ACID ESTERS AND METHOD OF PREPARATION

Thomas E. Haag, St. Louis; Steven R. Freebersyser, Florissant, and Donald F. Loncrini, Ellisville, all of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Oct. 23, 1980, Ser. No. 199,718
Int. Cl.³ B01J 13/00
U.S. Cl. 252—312 **20 Claims**

1. A stable, oil-in-water emulsion comprising from approximately 10% to 60% by weight of a eutectic oil containing a mixture of three or more lower alkyl esters of p-hydroxybenzoic acid, from approximately 1.5% to 5.0% by weight of an emulsifying agent selected from the group consisting of gelatin, casein, collagen, glyceryl oleate and the ammonium or sodium salt of sulfated nonylphenoxypoly(ethyleneoxy) ethanol and mixtures thereof, from approximately 3% to 10% by weight of sorbitol and the balance water.

11. The method of preparing a stable, oil-in-water emulsion comprising from approximately 10% to 60% by weight of a eutectic oil containing a mixture of three or more lower alkyl esters of p-hydroxybenzoic acid, from approximately 1.5% to 5.0% by weight of an emulsifying agent selected from the group consisting of gelatin, casein, collagen, glyceryl oleate and the ammonium or sodium salt of sulfated nonylphenoxypoly(ethyleneoxy) ethanol and mixtures thereof, from approximately 3% to 10% by weight of sorbitol and the balance water, which method comprises the steps of heating said eutec-

tic oil to a temperature of approximately 50° C. to 70° C., heating an aqueous solution of said emulsifying agent and sorbitol to a temperature of approximately 50° C. to 70° C., adding said heated eutectic oil to said heated aqueous solution, and thereafter mixing and homogenizing the resulting mixture to form said emulsion.

4,357,259

METHOD OF INCORPORATING WATER-SOLUBLE HEAT-SENSITIVE THERAPEUTIC AGENTS IN ALBUMIN MICROSPHERES

Andrew E. Senyei, and Kenneth J. Widder, both of Chicago, Ill., assignors to Northwestern University, Evanston, Ill.

Continuation-in-part of Ser. No. 820,812, Aug. 1, 1977, abandoned. This application Dec. 12, 1977, Ser. No. 859,842

Int. Cl.[3] **B01J** *13/02;* **A01N** *25/28;* **A61K** *9/64*

U.S. Cl. 252—316 **4 Claims**

1. The method of incorporating a water-soluble heat-sensitive therapeutic agent in albumin microspheres, in which all steps thereof are carried out at a temperature within the range from 1° to 45° C., said method including the steps of preparing an aqueous albumin solution of the said therapeutic agent, said albumin solution containing from 5 to 50 parts by weight of albumin per 100 parts of water and from 1 to 20 parts by weight of said therapeutic agent per 100 parts of albumin, emulsifying said albumin solution with a vegetable oil to form a water-in-oil emulsion containing dispersed droplets of the albumin solution, removing the oil by washing the dispersed droplets with an oil-soluble water-immiscible organic solvent, and recovering the resulting microspheres, wherein said method also includes the step of contacting said microspheres with an organic solvent solution of an aldehyde hardening agent to increase the stability of said microspheres and to decrease the release rate of said drug therefrom.

4,357,260

DISPERSIBLE XANTHAN GUM COMPOSITE

Paul A. Sandford, Del Mar, and John K. Baird, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 8, 1980, Ser. No. 147,808

Int. Cl.[3] **B01F** *3/12;* **C08L** *5/00;* **C09J** *3/02*

U.S. Cl. 252—363.5 **9 Claims**

1. A process for producing a dispersible xanthan gum composite consisting essentially of xanthan gum and silica wherein the ratio xanthan gum to silica ranges from about 19:1 to 1:1 which comprises:

(a) adding silica to a xanthan gum solution,

(b) then isolating said composite from said solution, and

(c) drying and milling the isolated composite.

4. A dispersible xanthan gum composite consisting essentially of xanthan gum and silica wherein the ratio xanthan gum to silica ranges from about 19:1 to 1:1, prepared by a process which comprises:

(a) adding silica to a xanthan gum solution,

(b) then isolating said composite from said solution, and

(c) drying and milling the isolated composite.

4,357,261

METHOD FOR MANUFACTURE OF A COMPOSITE COPPER-ARSENIC COMPOUND MIXTURE

Nobuo Takahashi, Niihama, and Hirao Toda, Saijo, both of Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,860

Claims priority, application Japan, Jul. 16, 1979, 54-90065

Int. Cl.[3] **C09K** *3/00*

U.S. Cl. 252—385 **13 Claims**

1. A method of manufacturing a composite copper-arsenic compound mixture in the form of copper arsenate and copper hydroxide, said composite copper-arsenic compound mixture being useful in the formation of antiseptic agents, said method comprising

a first step wherein a raw material which is composed of a sulfide containing copper and arsenic and is obtained as an intermediate byproduct from a nonferrous smelter or refinery is added to water to form a slurry; and wherein the copper and arsenic in the slurry are extracted into a liquid extract as copper sulfate and arsenic acid by adding a water-soluble cupric salt to the slurry, the extraction being conducted at a partial pressure of oxygen of not less than 1 kg/cm^2, a temperature of not less than 100° C. and a time period of not less than three hours, the water-soluble cupric salt, which acts as an accelerating agent for the oxidation of As(III) and the extraction of the copper sulfide, being adding in an amount sufficient to provide a copper concentration of not less than 20 g/liter of water in the slurry and thus provide a liquid extract having a Cu/As concentration ratio of not less than 1.0,

a second step of cooling the liquid extract obtained in the first step to a predetermined temperature to thereby effect solid-liquid separation of the liquid extract, and

a third step of adjusting the pH of the liquid resulting from the second step to a range of 6 to 7 to thereby cause copper and arsenic to precipitate as a composite mixture of copper arsenate and copper hydroxide, the mixture having a Cu/As concentration ratio of not less than 1.0.

4,357,262

ELECTRODE LAYER TREATING PROCESS

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,573

Int. Cl.[3] **C25B** *11/03, 11/12;* **B29D** *27/00;* **C25B** *13/08*

U.S. Cl. 252—425.3 **4 Claims**

1. A process for treating a structure containing one or more layer(s) containing polytetrafluoroethylene in conjunction with a water-soluble pore-forming agent(s) comprising contacting said structure with an alkylene polyol which (1) has a high initial boiling point of about 90° C. or higher (2) the capability of wetting polytetrafluoroethylene, (3) the ability to be soluble or miscible in water and (4) is non-poisoning to any catalyst contained therein; and then contacting said structure with water to remove said pore-forming agent.

2. A process as in claim 1 wherein said alkylene polyol is ethylene glycol.

3. A process as in claim 2 wherein said contact with said organic material is conducted at temperatures of about 50° to about 100° C. for time periods of from about 10 to about 60 minutes.

4,357,263

CATALYST FOR THE UPGRADING OF AROMATIC LIQUIDS

Roland H. Heck, Pennington; Stephen M. Cleck, Moorestown; Stuart S. Shih, Cherry Hill, and Robert C. Wilson, Woodbury, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 86,876, Oct. 22, 1979, Pat. No. 4,267,033. This application Dec. 16, 1980, Ser. No. 216,896

Int. Cl.[3] **B01J** *21/04, 23/85, 23/88, 27/04*

U.S. Cl. 252—439 **10 Claims**

1. A catalyst for the upgrading of a highly aromatic petroleum or coal derived liquid comprising at least one Group VIII metal or its oxides or sulfides and at least one additional member selected from the group consisting of chromium, molybdenum, tungsten, oxides thereof and sulfides thereof on a refractory support, said catalyst having a surface area of between about 110 and about 175 m^2/g and a total pore volume of between about 0.5 and about 0.8 cc/g and being further characterized as follows:

Pore Volume Distribution, Volume % in Pores of	
0–150 Angstroms diameter	25–35
150–200 Angstroms diameter	45–55
200+ Angstroms diameter	10–30

4,357,264

ALKALINE EARTH METAL MODIFIED ZEOLITE CATALYSTS

Chin-Chiun Chu, North Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 128,688, Mar. 10, 1980, Pat. No. 4,288,647. This application Apr. 24, 1981, Ser. No. 257,300

Int. Cl.³ B01J *29/28*

U.S. Cl. 252—455 Z **12 Claims**

1. A catalyst composition suitable for para-selective conversion of substituted aromatic compounds, said composition comprising a modified crystalline zeolite catalyst component characterized by a silica to alumina mole ratio of at least 12 and a constraint index within the approximate range of 1 to 12, said composition further having incorporated thereon at least 0.25 weight percent of at least one alkaline-earth metal selected from strontium and barium, said alkaline-earth metal being present in said catalyst in the form of its oxide.

6. The composition of claim 1 wherein said zeolite catalyst composition has deposited thereon at least 0.25 weight percent of phosphorus in addition to said alkaline-earth metal, said phosphorus also being present in said catalyst in the form of its oxide.

4,357,265

CATALYTIC CRACKING CATALYST

Robert L. Chiang, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 201,616, Oct. 28, 1980, abandoned. This application Sep. 2, 1981, Ser. No. 298,671

Int. Cl.³ B01J *29/08*

U.S. Cl. 252—455 Z **11 Claims**

1. A process for preparing a cracking catalyst which comprises:

(a) Exchanging a sodium type Y zeolite with an ammonium salt solution to lower the sodium content of said zeolite to below about 4 percent by weight Na_2O;

(b) calcining the ammonium exchanged zeolite at a temperature of from about 537° to 815° C.;

(c) mixing said calcined zeolite with an inorganic oxide matrix and water;

(d) spray drying said mixture; and

(e) reacting said spray dried mixture with an acid aluminum salt solution having a pH of from about 2.0 to 3.7 to lower the sodium content to below about 1.0 percent by weight Na_2O.

8. A cracking catalyst prepared by the process of claim 1.

9. The catalyst of claim 8 wherein said matrix is selected form the group consisting of clay, silica, alumina, silica-alumina sols and gels, and mixtures thereof.

4,357,266

FLEXIBLE RESISTOR COMPOSITIONS

Ryoichi Sado, Saitama, and Kenichi Okada, Ageo, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,619

Claims priority, application Japan, Jan. 25, 1980, 55-7634

Int. Cl.³ H01B *1/02*

U.S. Cl. 252—512 **5 Claims**

1. An electrically conductive flexible composition which comprises

(a) an electrically insulating polymeric material having flexibility,

(b) from 5 to 75% by volume based on the total volume of the composition of a metallic silicon dispersed in the electrically insulating polymeric material, wherein said silicon is in either finely divided particulate form with the particle size being such as to pass a screen of 100 mesh openings or in fibrous form such that the fiber diameter does not exceed 200 μm, and

(c) an organosilicon compound having at least one functional group bonded to the silicon atom in a molecule or having at least one peroxy linkage directly bonded to the silicon atom in a molecule.

4,357,267

THERMOPLASTIC MOULDING COMPOSITIONS OF CELLULOSE ESTERS

Heinrich Alberts; Winfried Fischer, both of Cologne; Friedemann Müller, Neuss; Horst Peters, Leverkusen; Christian Leuschke, Dormagen, and Hans-Peter Baasch, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 11, 1980, Ser. No. 215,328

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951747

Int. Cl.³ C08L *1/10, 1/14*

U.S. Cl. 524—40 **4 Claims**

1. Thermoplastic moulding compositions, consisting essentially of

(1) from 1 to 99% by weight of a cellulose ester of one or more aliphatic C_1–C_5-carboxylic acids, and

(2) from 99 to 1% by weight of a graft copolymer of

(a) from 5 to 90% by weight of an ethylene-vinyl ester copolymer, containing from 5 to 75% by weight of incorporated vinyl ester, as the graft substrate and polymerized units of

(b) from 95 to 10% by weight of vinyl esters and/or alkyl esters of acrylic and/or methacrylic acid, and

(c) from 0 to 20% by weight of C_2–C_4-α-olefins,

the sum of components (1) and (2) and (a) to (c) always amounting to 100% by weight.

4,357,268

NUCLEATION AGENTS FOR CRYSTALLINE POLYMERS

Nicholas Vanderkooi, Jr., Pompton Plains; John C. Haylock, Sparta; Stephen R. Schulze, West Caldwell, and Harold W. Tuller, Long Valley, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 29, 1980, Ser. No. 220,878

Int. Cl.³ C08L *91/00;* C08K *5/09;* C08L *67/02*

U.S. Cl. 524—285 **38 Claims**

1. A composition comprising:

polyethylene terephthalate; and

from about 0.2 percent to about 10 percent, based on the weight of the polyethylene terephthalate, of a nucleating agent comprising a dimer acid and trimer acid mixture, the mixture having from 0 percent to 100 percent by weight trimer acid, the dimer acid having at least 36 carbon atoms and two carboxyl groups, the trimer acid having at least 54 carbon atoms and three carboxyl groups, with the total amount of carboxyl groups being neutralized from 10 to 100 percent by a cation of a metal selected from Group IA of the Periodic Table of the Elements.

4,357,269

MOLDING COMPOUND

Vincent R. Landi, Danielson, and Jeffrey L. Dalton, Thompson, both of Conn., assignors to Rogers Corporation, Rogers, Conn.

Filed Mar. 9, 1981, Ser. No. 241,521
Int. Cl.³ C08L 35/02
U.S. Cl. 523—206 7 Claims

1. A molding compound comprising:
a diallyl phthalate molding compound; and
0.1% to 2% by weight of encapsulated water.

4,357,270

PROCESS FOR THE AGGLOMERATION OF RUBBER LATEXES

Roberto Pippa, Noale; Andrea De Toffol, Cerro Maggiore; Agostino Lepori, Fagnano Olona, and Luigi Mara, Castellanza, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Nov. 26, 1980, Ser. No. 210,729
Claims priority, application Italy, Nov. 27, 1979, 27574 A/79
Int. Cl.³ C08L 7/02
U.S. Cl. 523—335 19 Claims

1. Process for agglomerating latexes of rubbery polymers characterized in that, to the latex to be agglomerated there is added, under stirring and at a temperature higher than the glass transition temperature of the polymer to be agglomerated, a previously prepared agglomerating latex containing (1) a polymer, other than that present in the latex to be agglomerated and less lipophilic than the latter, selected from (a) homopolymers of alkyl acrylates and methacrylates in which the alkyl has from 1 to 12 carbon atoms, and (b) copolymers of ethylenically unsaturated monomers capable of forming water-insoluble homopolymers, and selected from the group consisting of copolymers formed from acrylic or methacrylic alkyl esters wherein the alkyl group contains from 1 to 12 carbon atoms, with styrene or acrylonitrile or acrylonitrile with butadiene, styrene or methyl-styrene and (2) a non-ionic surfactant consisting of an addition product of ethylene oxide, the agglomerating latex being added in a quantity corresponding to 0.1–20 parts by weight of solid polymer and to 0.0001–0.2. parts by weight of surfactant per 100 parts by weight of the rubbery polymer present in the latex to be agglomerated.

4,357,271

THERMOPLASTIC POLYCARBONATE RESINS REINFORCED WITH SILANE TREATED FILLERS

Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 31, 1980, Ser. No. 221,705
Int. Cl.³ C08L 69/00; C08J 3/00
U.S. Cl. 523—212 14 Claims

1. A composition comprising
a. A major amount of polymeric resin comprising a thermoplastic aromatic polycarbonate resin in admixture, with
b. a minor amount of a filler having reactive groups which are normally reactive with aromatic polycarbonate resin, and
c. a minor amount of a silane of the following formula

$$R'—(CH_2)_nSi(OR)_3$$

where R′ is an organic radical selected from the group consisting of alkyl, aryl, vinyl, amino, mercapto, acetoxy, epoxy, and methacryloxy,
n is an integer of about 3 to about 6, and
R is alkyl having up to four carbon atoms.

4,357,272

RECOVERING PURIFIED ANTIBODIES FROM EGG YOLK

Alfred Polson, Cape Town, South Africa, assignor to The South African Inventions Development Corporation, Pretoria, South Africa

Filed Mar. 15, 1979, Ser. No. 20,786
Claims priority, application South Africa, Mar. 22, 1978, 78/1662
Int. Cl.³ A23J 1/09; A61K 39/00; C07G 7/00; G01N 33/54
U.S. Cl. 260—112 R 13 Claims

1. A process for recovering purified IgY antibodies from fowl egg yolk containing said antibodies, comprising the steps of
(a) rendering the lipid content and the caseinous protein of the egg yolk water-indispersable by mixing the yolk with water and a water-soluble linear filamentary non-charged polymer precipitant in a concentration sufficient to substantially suppress the dispersability of lipids and caseinous protein without substantially suppressing the dispersability of IgY antibodies;
(b) separating egg yolk substances thus rendered indispersable, including the lipid content, from an aqueous phase which still contains the antibodies dispersed therein; and
(c) recovering the antibodies from said aqueous phase.

2. A process according to claim 1, wherein the precipitant is selected from the group consisting of polyethylene glycols, polypropylene glycols, mixed polymers of ethylene glycols and higher homologues thereof and poly-1,4-dihydroxy butaneglycol.

4. A process according to claim 1, wherein the precipitant is selected from the group consisting of polyalkylene glycols and dextran.

4,357,273

ANTITUMOR PROTEIN HYBRID AND PROCESS FOR THE PREPARATION THEREOF

Yasuhiko Masuho; Naoji Umemoto, both of Hino; Takeshi Hara, Hachioji, and Hidematsu Hirai, 9-5, Sakaigawa 3-chome, Chuo-ku, Sapporo-shi, Hokkaido, all of Japan, assignors to Teijin Limited, Osaka and Hidematsu Hirai, Hokkaido, both of, Japan

Filed Jul. 21, 1980, Ser. No. 170,393
Claims priority, application Japan, Jul. 19, 1979, 54-90934
Int. Cl.³ C07C 103/52; A61K 37/00
U.S. Cl. 260—112.5 R 9 Claims

1. Antitumor protein hybrid comprising (1) a moiety which is substantially the fragment Fab of an anti-α-fetoprotein antibody and (2) a moiety which is substantially the fragment A of a diphtheria toxin, which antitumor protein hybrid is expressed by the following formula (I):

$$Fab(S_1—(X)_n—S_2—FA)_m \quad (I)$$

where Fab indicates a moiety which is substantially the fragment Fab of an anti-α-fetoprotein antibody; FA indicates a moiety which is substantially the fragment A of diphtheria toxin; X indicates a pharmacologically inert divalent organic radical; S_1 and S_2 are both sulfur atoms, S_1 indicating a sulfur atom arising from the disulfide bond in the anti-α-fetoprotein antibody and S_2 a sulfur atom arising from the disulfide bond in the diphtheria toxin; n represents 0 or 1 and m represents an integer of 1 to 5.

4,357,274

PROCESS FOR THE MANUFACTURE OF SCLERO PROTEIN TRANSPLANTS WITH INCREASED BIOLOGICAL STABILITY

Heinz-Helmut Werner, Melsungen, Fed. Rep. of Germany, assignor to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Aug. 6, 1981, Ser. No. 290,519
Int. Cl.³ C07G 7/00; C08H 1/00, 1/06
U.S. Cl. 260—123.7 8 Claims

1. In a process for the manufacture of sclero protein transplants in which raw sclero protein from humans or animals is watered, treated with H_2O_2, degreased, rinsed, dried and sterilized, the improvement in which the sclero protein, after rinsing and prior to drying, is treated with glycerin or polyethylene glycol.

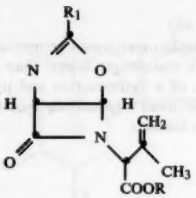
4,357,275

NOVEL OXAZOLINOAZETIDINONES AND PROCESS THEREFOR

Wayne A. Spitzer, and Theodore Goodson, Jr., both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 50,041, Jun. 16, 1979, Pat. No. 4,243,588. This application Sep. 18, 1980, Ser. No. 188,199
Int. Cl.³ C07D 498/04
U.S. Cl. 260—245.4 7 Claims

1. A compound of the formula



wherein R is hydrogen, t-butyl, dimethylallyl, 2-iodoethyl, 2,2,2-trichloroethyl, benzyl, 4-methoxybenzyl, 4-nitrobenzyl, diphenylmethyl, phenacyl, 4-halophenacyl, tri(C_1–C_4 alkyl)silyl, or C_2–C_4 alkanoyl; and $R_1$is

(a) hydrogen, C_1–C_4 alkyl or halo(C_1–C_4 alkyl);

(b) a group R_6 wherein R_6 is phenyl or phenyl substituted by 1 or 2 groups selected from the group consisting of fluoro, chloro, bromo, iodo, nitro, cyano, C_1–C_4 alkyl, C_1–C_4 alkoxy, formyloxy, chloroacetoxy, benzyloxy, benzhydryloxy, trityloxy, 4-nitrobenzyloxy, trimethylsilyloxy, phenacyloxy, methoxymethoxy, tetrahydropyranyloxy, carbamyl, trifluoromethyl and methanesulfonamido;

(c) a group of the formula

$$R_6(O)_mCH_2-$$

wherein m is 1 or 0 and R_6 is as defined above;

(d) a group of the formula

$$R_{6a}CH_2-$$

wherein R_{6a} is cyclohexadienyl, 2-furyl, 2-thienyl, or 3-thienyl; or

(e) a group of the formula —COOR wherein R is as defined above.

4,357,276

PROCESS FOR SEPARATION OF INDOLE USING X AND Y TYPE ZEOLITES

Kenji Takasa, Yokohama; Keizo Hirakawa, Tokyo; Hiroji Nishimaru, Kawasaki, and Makoto Honda, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 16, 1980, Ser. No. 197,459
Claims priority, application Japan, Nov. 2, 1979, 54-141215; Feb. 8, 1980, 55-13532
Int. Cl.³ C07D 209/08, 209/06
U.S. Cl. 260—319.1 12 Claims

1. A process for separating indole from a mixture of indole with at least one compound selected from the group consisting of naphthalene, thionaphthene, 1-methylnaphthalene, 2-methylnaphthalene, biphenyl, 1,5-dimethylnaphthalene, 2,6-dimethylnaphthalene, acenaphthene, diphenylene oxide and fluorene which comprises the step of contacting the mixture with an X type zeolite whose exchangeable cation sites are occupied by at least one cation selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, barium, copper, silver, zinc, cadmium, iron, nickel, cobalt and lanthanum ions or a Y type zeolite whose exchangeable cation sites are occupied by at least one cation selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, barium, copper, silver, zinc, cadmium, iron, nickel, cobalt and lanthanum ions to selectively adsorb indole on the zeolite and contacting a desorbent A selected from the group consisting of C_{2-10} aliphatic ethers, C_{7-10} aromatic ethers, C_{2-10} aliphatic esters and C_{3-10} aliphatic ketones, with the indole-adsorbed zeolite to separate indole, the selectivity of the zeolite for indole over the desorbent A represented by K indole desorbent A ranging from 0.1 to 10.

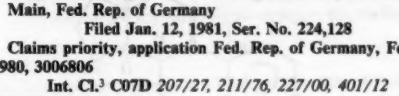
4,357,277

NOVEL PROCESS FOR THE PREPARATION OF N,N'-BISACYL HYDRAZIDES

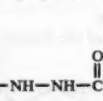
Winfried Orth, Hassloch; Fritz W. Lange, Gauting, and Werner Fickert, Mannheim-Seckenheim, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 12, 1981, Ser. No. 224,128
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006806
Int. Cl.³ C07D 207/27, 211/76, 227/00, 401/12
U.S. Cl. 260—326.25 9 Claims

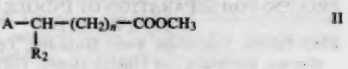
1. In a process for the preparation of acyl hydrazides of the formula



wherein A and B individually are a group of the formula

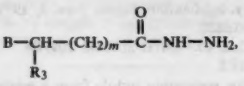


wherein R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, x is 0 or 1 and R_2 and R_3 are individually selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms and n and m are individually 0, 1, 2 or 3 by reacting a compound of the formula



II

with a hydrazide of the formula



III

the improvement comprising effecting the reaction in the presence of at least one catalyst selected from the group consisting of primary, secondary or tertiary aliphatic, alicyclic and heterocyclic amines having 1 to 3 amino groups and amine alkoxides and quaternary ammonium hydroxides derived from said amines.

4,357,278

PROCESS FOR SYNTHESIZING ESTRONE OR ESTRONE DERIVATIVES

Gerhard Quinkert, Glasshütten; Wolf-Dietrich Weber, and Ulrich Schwartz, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

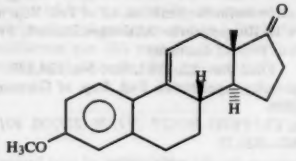
Filed Apr. 10, 1981, Ser. No. 252,841

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014120

Int. Cl.[3] **C07J** *1/00*

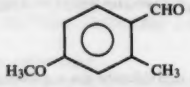
U.S. Cl. 260—397.45 **3 Claims**

2. A process for synthesizing 9(11)-dehydroestrone-3-methyl ether of the formula

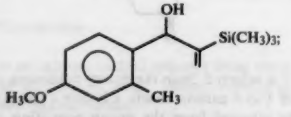


which method comprises:

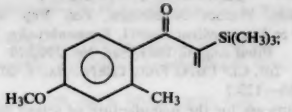
reacting the aldehyde of the formula



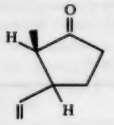
with a Grignard reagent formed between metallic magnesium and 1-bromovinyltrimethylsilane to form the compound of the formula



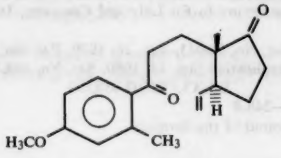
oxidizing the last-mentioned compound to form the compound of the formula



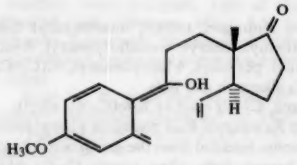
reacting the last-mentioned compound with a compound of the formula



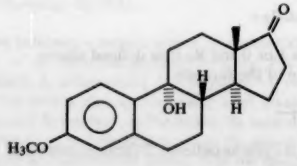
in the presence of an alkali metal alcoholate or alkaline earth metal alcoholate to form the compound of the formula



irradiating the last-mentioned compound with ultraviolet light having a wavelength longer than 340 nanometers in the presence of a hydrocarbon and pyridine/mesitol to form the short-lived intermediate o-quinodimethane compound of the formula



which, under the conditions of irradiation, forms 9-alpha-hydroxyestrone-3-methyl ether of the formula



and dehydrating the last-mentioned compound into the desired 9(11)-dehydroestrone-3-methyl ether.

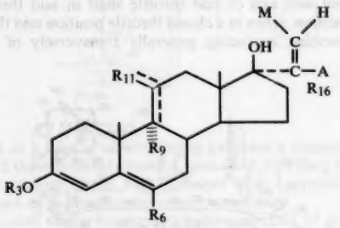
4,357,279

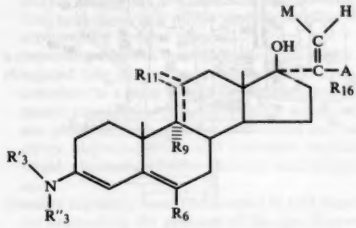
PREPARATION OF CORTICOIDS FROM 17-KETO STEROIDS

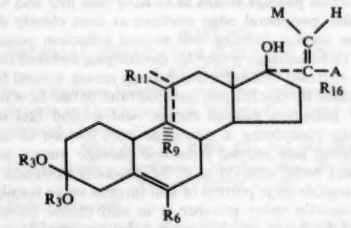
Jerry A. Walker, and Edward J. Hessler, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

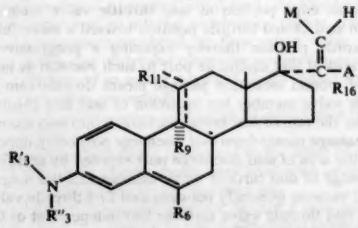
Filed May 18, 1981, Ser. No. 264,593
Int. Cl.³ C07J 7/00
U.S. Cl. 260—397.45 11 Claims

1. A protected C_{21} steroid selected from the group consisting of


(IVa)


(IVb)


(IVc)


(IVd)

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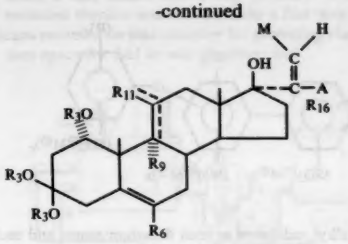

(IVe)

where A, M, R_3, R_3', R_3'', R_6, R_9, R_{11}, R_{16}, ~ and are defined in the specification.

4,357,280

USE OF TERTIARY PHOSPHINES IN PHOTOGRAPHIC SILVER DYE BLEACH MATERIALS

Christoph Chylewski; Gerald Jan, both of Marly; Roland Kurzen; Max Meier, both of St. Antoni, and Matthias Schellenberg, Marly, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 950,770, Oct. 12, 1978, abandoned, which is a division of Ser. No. 740,710, Nov. 11, 1976, Pat. No. 4,138,256. This application May 29, 1981, Ser. No. 268,222
Claims priority, application Switzerland, Nov. 17, 1975, 14861/75
Int. Cl.³ C07C 121/20, 121/453, 121/52
U.S. Cl. 260—465 R 1 Claim

1. A phosphine of the formula

wherein Y_3 is $-(CH_2)_2-SO_3^{\ominus}M^{\oplus}$, $-(CH_2)_3-SO_3^{\ominus}M^{\oplus}$, $-(CH_2)_4-SO_3^{\ominus}M^{\oplus}$, $-CH(CH_3)-(CH_2)_2-SO_3^{\ominus}M^{\oplus}$ or

$-CH_2-CH_2-OCH_3$, W_2 is $-CH_2-CH_2-CN$ or

and X_2 is $CNCH_2CH_2-$ or $CH_3OCH_2CH_2-$ and $M^{\oplus}$ is hydrogen, $NH_4^{\oplus}$, $Na^{\oplus}$ or $K^{\oplus}$, at least one of the W_2 and X_2 groups containing a cyano moiety.

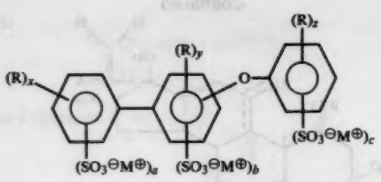
4,357,281

ALKYLATED BIPHENYLYL PHENYL ETHER SULFONATES

Paul E. Hinkamp, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 30, 1978, Ser. No. 910,241
Int. Cl.³ C07C 143/42
U.S. Cl. 260—512 C 5 Claims

1. Alkylated biphenylyl phenyl ether sulfonates of the formula



(I)

wherein

R is an alkyl radical of at least 6 carbon atoms and each R can be the same or different;

$M^{\oplus}$ is hydrogen, alkali metal ion, alkaline earth metal ion or ammonium ion radical and each $M^{\oplus}$ can be the same or different;

a, b and c are individually integers of 0 or 1 with the proviso that the $\Sigma(a+b+c)$ is equal to 2 or 3; and

x, y and z are individually integers of 0–2 with the proviso that $\Sigma(x+y+z) \geq 1$.

4,357,282

PREPARATION OF FLUOROCARBONYL COMPOUNDS

Daniel G. Anderson; David C. England, and Alwin S. Milian, Jr., all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 71,684, Aug. 31, 1979. This application Apr. 3, 1981, Ser. No. 250,134

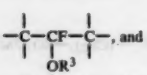
Int. Cl.³ C07C *51/58*

U.S. Cl. 260—544 F **12 Claims**

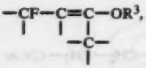
1. A method of preparing fluorinated carbonyl compounds which comprises contacting a fluorinated methyl or ethyl ether containing at least one methoxylated carbon atom-containing group selected from the group consisting of

$-CF_2OR^3$,

$=CFOR^3$,



, and



,

wherein R^3 is CH_3 or C_2H_5, with a catalyst selected from the group consisting of

SbX_5, TaX_5, NbX_5, AsX_5, BiX_5, TiX_4, ZrX_4, HfX_4, FeX_3, mixtures of SbX_3 and SbX_5, $ZM'X'_6$, and mixtures of $ZM'X'_6$ and $M'X_5$ where M' is Sb or As; X, independently, is F, Cl, Br or I; X' is F or Cl; and Z is H, NO, O_2, alkali metal or NY_4 were Y, independently, is H or alkyl of 1 to 6 carbon atoms at a temperature of −20° to 200° C.

4,357,283

CARBURETOR

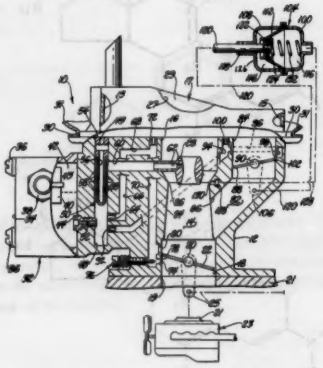
William O. Manning, Warren, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,113

Int. Cl.³ F02M *11/02*

U.S. Cl. 261—23 A **9 Claims**

1. A carburetor for a combustion engine, comprising carburetor body means, first induction passage means formed in said carburetor body means, said first induction passage means comprising first inlet means for the entrance of air and first outlet means for the discharge of air and fuel therefrom, venturi means having venturi throat means carried within said first induction passage means generally between said first inlet means and first outlet means, selectively variably positionable first throttle valve means situated in said first induction passage means downstream of said venturi means, second induction passage means, said second induction passage means comprising second inlet means for the entrance of air and second outlet means for the discharge of air and fuel therefrom, variably rotatably positionable second throttle valve means situated in said second induction passage means downstream of said second inlet means and upstream of said second outlet means, said second throttle valve means comprising a plate-like throttle valve member, a throttle shaft for rotatably carrying said throttle valve member, said throttle valve member having first and second peripheral edge portions generally rotatably swingable about the axis of said throttle shaft when said throttle valve member is rotated about said axis of said throttle shaft, said first swingable peripheral edge portion rotatably swinging in generally the upstream direction of said second induction passage means when said throttle valve member is rotated about said axis of said throttle shaft in a throttle opening direction, said second swingable peripheral edge portion rotatably swinging in generally the downstream direction of said second induction passage means when said throttle valve member is rotated about said axis of said throttle shaft in said throttle opening direction, when in a closed throttle position said throttle valve member extending generally transversely of said



second induction passage means as to have said first and second swingable peripheral edge portions at least closely disposed to the surface defining said second induction passage means, first fuel discharge means for discharging metered rates of fuel flow into said first induction passage means, second fuel discharge means for discharging metered rates of fuel flow into said second induction passage means, said second fuel discharge means comprising a discharge port formed in said surface defining said second induction passage means, said discharge port being situated as to be generally upstream of said first swingable edge portion of said throttle valve member when said throttle valve member is in said closed throttle position, said discharge port being generally traversed by said first swingable edge portion as said throttle valve member moves from said closed throttle position toward a more fully opened throttle position thereby exposing a progressively increasing area of said discharge port to such vacuum as may exist in said second induction passage means downstream of said throttle valve member but upstream of said first throttle valve means, the rate of fuel being discharged into said second induction passage means from said discharge port being dependent upon the area of said discharge port exposed by said first swingable edge of said throttle valve member and the magnitude of said vacuum generally between said first throttle valve means and said throttle valve member and independent of the velocity of the rate of air flow through said second induction

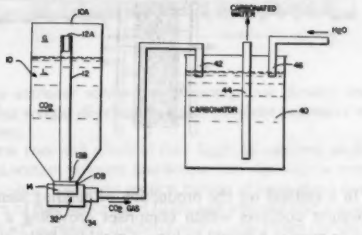
passage means, and said second outlet means of said second induction passage means communicating directly with said first induction passage means as to discharge air-fuel mixtures from said second induction passage means into said first induction passage means at an area thereof downstream of said venturi throat means and upstream of said first throttle valve means.

4,357,284

CO_2 SUPPLY SYSTEM FOR A CARBONATOR DEVICE

Jason K. Sedam, Dunwoody, Ga., assignor to Coca Cola Company, Atlanta, Ga.

Filed Jun. 26, 1981, Ser. No. 277,806
Int. Cl.³ B01F 3/04
U.S. Cl. 261—121 R 3 Claims



3. In a system for dispensing gas from a container having a fluid therein under pressure, said fluid including both a liquid and gaseous phase, said container having opposed open and closed ends, the improvement comprising:

socket means for receiving the open end of said container and for supporting the weight of said container therein so that said open end points downwardly as viewed in a substantially vertical plane;

a dispensing outlet in operative association with said socket;

elongated tube means extending from said open end of said container to a point spaced from said closed end, said tube means providing a passage through which only the gaseous phase of fluid adjacent said closed end may be selectively dispensed from said container separate from the liquid phase thereoelow through said dispensing outlet; and

pressure regulator means connected to said dispensing outlet for controlling the pressure of the gas dispensed.

4,357,285

THERMAL REGULATOR FOR FUEL AND AIR TO A CARBURETOR

Jose L. Pallares-Martinez, and Jose Pallares-Osorio, both of Viveros de Coyoacan No. 5, Viveros de la Loma, Tlalnepantla, State of Mexico, Mexico

Filed Mar. 27, 1981, Ser. No. 248,255
Claims priority, application Mexico, Mar. 28, 1980, 181780
Int. Cl.³ F02M 31/16
U.S. Cl. 261—145 9 Claims

1. An apparatus for providing fuel of a predetermined temperature and at a predetermined feed rate based on demand to a carburetor of an internal combustion engine comprising:

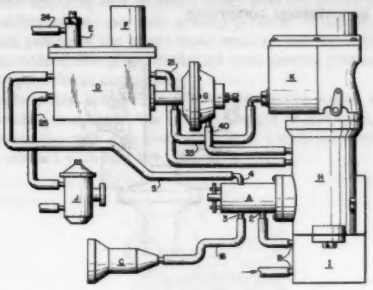
a temperature-regulated air flow mixer valve having two inlets, one outlet and means for sensing temperature of the interior of an intake manifold of the engine and operating the valve accordingly;

cool air inlet means connected to one of said inlets of said valve;

warm air inlet means connected to the other of said inlets of said valve having means associated with an exhaust manifold of the engine for warming air;

a thermal balancing chamber having a tube passing therethrough connected to said outlet of said mixer valve, a fuel inlet, a fuel outlet and a fuel pressure control valve mounted thereon and connected to a fuel tank;

means mounted on said chamber for providing elastic expansion space for fuel in said chamber; and



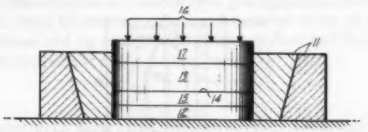
means mounted at said outlet of said chamber responsive to engine vacuum for metering fuel flow to the carburetor based on demand.

4,357,286

METHOD OF MAKING A GRAPHITE-GLASS COMPOSITE LASER MIRROR

Robert K. Stalcup, Lake Park, Fla., and Karl M. Prewo, Vernon, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 5, 1980, Ser. No. 206,911
Int. Cl.³ B29D 11/00
U.S. Cl. 264—1.2 6 Claims



1. A method of making a laser mirror comprising laying up alternating ply stacks of graphite fibers and particulate glass in a pressing mold having a highly polished mirror replicating surface, said laying being glass-rich against the replicating surface, hot pressing the graphite-glass in the mold to form a laser mirror composite having a mirror surface requiring little or no surface polishing, and applying a laser radiation reflecting layer to the mirror surface.

4,357,287

METHOD OF FINE AND VERY FINE COMMINUTION OF MATERIALS HAVING BRITTLE BEHAVIOR

Klaus Schönert, Berliner Str. 27a, 7500 Karlsruhe 21, Fed. Rep. of Germany

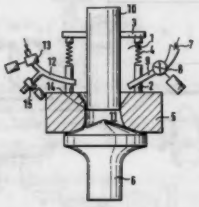
Continuation of Ser. No. 878,758, Feb. 17, 1978, abandoned.
This application May 23, 1980, Ser. No. 152,540
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1977, 2708053
Int. Cl.³ B28B 7/04
U.S. Cl. 264—39 25 Claims

1. In a method for comminution of particles of brittle materials to obtain product of fine particles the maximum particle size of which is approximately in the range 2 μm–1000 μm comprising:

(a) stressing a bed of bulk coarse material containing particles of the brittle material to be comminuted which are of

a size larger than the fine particles to be obtained, between non-yielding hard surfaces to thereby obtain comminution of the coarse particles into finer fragments along with a agglomeration of finer fragments; and

(b) subsequently disintegrating the resulting agglomerates to obtain the product containing the fine fragments, the improvement comprising:



(c) carrying out said stressing of said bed of material by subjecting said bed to a pressure of at least 500 kg/cm^2 between said non-yielding surfaces; and

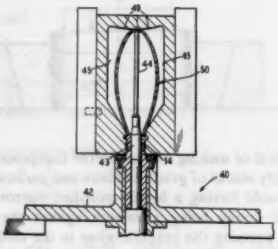
(d) carrying out said stressing in a single pass, whereby the total energy required comminute said particles will be substantially reduced.

4,357,288

METHOD OF MAKING CLEAR TRANSPARENT POLYPROPYLENE CONTAINERS

David C. Oas, Lenox, and Delore M. Clairmont, Richmond, both of Mass., assignors to Deacon Machinery, Inc., Pittsfield, Mass.

Filed Feb. 25, 1980, Ser. No. 124,138
Int. Cl.^{3} B29C *17/07*
U.S. Cl. 264—40.6 **1 Claim**



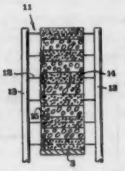
1. A method for making a blow-molded clear polypropylene bottle; comprising working and heating crystalline polypropylene so as to form a melt, causing a sample of said melt to fall and while falling determining the appearance of the sample, controlling said working and heating so as to provide said melt with a temperature not substantially higher than causes said sample to change from a cloudy appearance to a clear appearance, flowing said melt while at said temperature onto a polished cold surface having a temperature no higher than room temperature so as to form a parison, said melt being flowed at a rate slower than one causing said melt to fracture during said flowing, allowing said parison to cool so as to solidify and removing it from said cold surface, heating said parison to a stretch blow molding temperature just below its amorphous flow temperature and no higher than the minimum permitting stretch blow molding of the parison, placing the parison in a stretch blow molding die having a temperature no higher than room temperature and having a cavity shaped to form said bottle, the cavity having a bottom for forming the bottle's bottom, and stretch blow molding the parison by stretching it first completely to the cavity's said bottom while at the same time blowing the parison only so as to cause it to only partially fit said cavity, and only thereafter completely blowing the parison so as to cause it to completely fit said cavity and form said bottle, and removing the bottle from said cavity.

4,357,289

METHOD FOR THE PRODUCTION OF BUILDING ELEMENTS OF THE LIGHTWEIGHT CONCRETE TYPE

Per A. H. Jakobsson, Blombergsvägen 24, 702 30 Örebro, Sweden

Filed Jan. 21, 1981, Ser. No. 226,759
Claims priority, application Sweden, Jan. 31, 1980, 8000768
Int. Cl.^{3} B29H *7/20*
U.S. Cl. 264—42 **15 Claims**



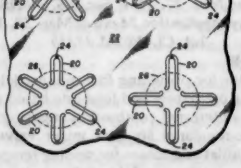
1. In a method for the production of building elements of lightweight concrete which comprises providing a viscous slurry or mass in a mould to form a moulded body, stiffening the body, and cutting the stiffened body into a plurality of individual building elements of smaller size than the moulded body, the improvement which comprises providing a plurality of zones of slurry or mass having different density and/or nature in said moulded body, and cutting the stiffened body along a plane within said zone rather than along an interface between adjacent zones, to provide said plurality of building elements whereby the individual building elements each include at least two portions having a different density and/or nature.

4,357,290

SPLITTABLE CONJUGATE YARN

Jing-peir Yu, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 108,428, Dec. 31, 1979. This application Sep. 12, 1980, Ser. No. 186,879
Int. Cl.^{3} B27H *7/18*
U.S. Cl. 264—147 **2 Claims**



1. A spinning process, comprising:

a. generating a plurality of molten streams from a spinneret, said streams being formed from axially extending continuous segments of dissimilar polymers arranged alternately in side-by-side temporarily adhering relationship;

b. quenching said streams to form filaments; and

c. withdrawing said filaments from said streams, said streams

being selected such that first and second of said filaments have substantially the same denier and are splittable into different numbers of subfilaments.

4,357,291
DOUBLE METERING EXTRUDER SCREW AND METHOD OF EXTRUSION

John C. Miller, Piscataway, and Archibald L. Burnett, Warren, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 28, 1980, Ser. No. 182,145
Int. Cl.³ B29B *1/06*
U.S. Cl. 264—176 R **11 Claims**

1. An extruder screw for extruding low density narrow molecular weight distribution linear ethylene polymers which comprises:

a screw root and a helical feed flight of constant pitch;

a feed section wherein said screw root diameter is constant;

a first short transition section having at least about one-half turn of said helical feed flight and wherein said screw root has an increasing diameter and is larger than the diameter in said feed section;

a first metering section wherein said screw root has a constant screw root diameter greater than the screw root diameter in said feed and first short transition sections;

a second short transition section having at least about one-half turn of said helical flight and wherein said screw root diameter is larger than the diameter of the screw root in said first metering section; and

a second metering section wherein said screw has a constant screw root diameter greater than the screw root diameter in said first metering section.

6. A method for extruding low density narrow molecular weight distribution, linear, ethylene polymers which comprises introducing said granular polymers into an extruder apparatus having an extruder screw having a helical feed flight of constant pitch and including a feed zone comprising a constant screw root diameter; thence passing said polymers through a first short transition zone of said screw wherein the screw root diameter increases; thence passing said polymers through a first metering zone of said screw having a constant screw root diameter greater than the screw root diameter in said feed zone; continuing passage of said polymer into and through a second short transition zone wherein the screw root diameter increases; and thence passing said polymer into and through a second metering zone having a constant screw root diameter greater than the screw root diameter in said first metering zone.

4,357,292
METHOD OF MOLDING IN SOLID FLOOR PLATE TO A FIBERGLASS REINFORCED MOLDED RESIN GRATING

Robert E. Myers, Houston, Tex., assignor to International Grating, Inc., Houston, Tex.

Filed Aug. 27, 1981, Ser. No. 296,669
Int. Cl.³ B29D *3/02*; B29G *5/00*
U.S. Cl. 264—257 **4 Claims**

1. In a process for molding fiberglass reinforced resin gratings, said process comprising the steps of:

laying resin coated fiberglass strands in overlapping fashion within intersecting sets of slots within a slotted lower mold member,

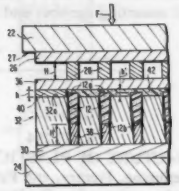
driving an upper mold member downwardly towards said lower mold member with said upper mold member bearing a set of intersecting downwardly projecting grid members in number, location and width to the slots of the lower mold and

causing said grid member to penetrate said slots to a predetermined distance to effect compression of said strands and resin within the slots of said lower mold member, while applying heat to effect under heat and pressure the molding of an open grid grating preform of intersecting bars, raising of the upper mold member and removing of the molded fiberglass reinforced resin grating preform,

the improvement comprising:

providing first shims within the slots of the lower mold member to a height less than the height of said slots,

lowering the open grid grating preform within the slots and in contact with said first shims,



interposing a sheet of molding compound material between said checker plate and the upper surface of said lower mold member and onto said grating preform,

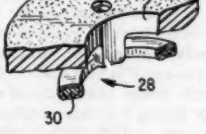
lowering the upper mold member under compressive force with an imperforate checker plate interposed between the projecting grid members of said upper mold member and said mold compound material sheet, and

compressing said sheet of molding compound material while applying heat thereto to mold said molding compound material sheet to the upper ends of the grating bars of said molded grating preform to form a molded in solid plate fiberglass reinforced molded resin grating product resin of said sheet of molding compound material being at least softened and by compression caused to flow and bond to said upper ends of the grating bars.

4,357,293
METHOD FOR MOLDING A MOUNTING MEMBER IN PLACE

James H. Williamson, Jr., 170 Linden St., Winnetka, Ill. 60093

Division of Ser. No. 87,219, Oct. 22, 1979, Pat. No. 4,300,698.
This application Aug. 22, 1981, Ser. No. 275,869
Int. Cl.³ B29C *6/04*
U.S. Cl. 264—275 **6 Claims**



1. The method for fabricating an article molded from a molding resin having a wall with a mounting member embedded as an insert wherein, upon completion of the molding step, said mounting member can accommodate the attachment of a device to the wall of the article, said method comprising the steps of:

providing a mounting member having an alignment ring with a plurality of posts unitary with the ring, each post projecting outwardly from said ring and having a distal

end defining a threaded bore for receiving a threaded fastener;

positioning said mounting member within the cavity of a mold and temporarily releasably securing said mounting member to said mold with the openings of said bores facing an interior surface of the mold;

molding said article to form a wall of the article in which is embedded at least a portion of each said post with at least said threaded bore of each said post communicating with the exterior of said article, with said alignment ring being spaced from said formed wall, and with said alignment ring being encapsulated with said molding resin along with any portions of said posts extending from said formed wall to said alignment ring;

permitting said resin to at least partially solidify; and

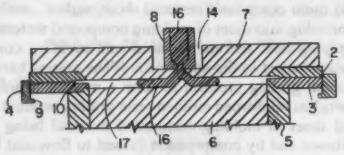
releasing said mounting member and article from said mold.

4,357,294

MANUFACTURE OF PLASTIC CONTAINERS

Brian L. Hetherington, Iverary, and Peter Y. Kelly, Kingston, both of Canada, assignors to Du Pont Canada Inc., Mississauga, Canada

Filed Jan. 30, 1981, Ser. No. 229,874
Claims priority, application Canada, May 24, 1978, 304002
Int. Cl.³ B29C *17/04*
U.S. Cl. 264—294 **7 Claims**



1. Improvement in the process for manufacture of plastic containers comprising

A. forming a pre-form of thermoplastic material in a transfer means,

B. applying the transfer means carrying the pre-form to a mould having a cavity corresponding to the shape of the container,

C. forming the pre-form into a container in the mould cavity, and

D. separating the container from the cavity, the improvement comprising (a) forming the pre-form by introducing into the closed space between opposite sides of the transfer means a predetermined amount of a thermoplastic material selected from the group consisting of polyethylene and polypropylene, the material being introduced through a passage of at least 0.50 cm diameter in one side of the transfer means, and the closed space being defined by surfaces having a surface roughness in the range of 50–125 μm rms, and (b) mechanically compressing the thermoplastic material within the closed space by applying pressure from the other side of the transfer means prior to completion of the introduction of the material into the closed space, and continuing the mechanical compression after the passage is closed until the closed space is completely filled, the thermoplastic material being maintained in a state of flow in the closed space at all times between the commencement of introduction of the material into the closed space and the completion of the mechanical compression of the material.

4,357,295

PROCESS FOR ELIMINATING HAZE FROM ARTICLES MADE OF CELLULOSE ACETATE BUTYRATE

Theodore A. Haddad; Walter Kondig, both of Leominster, and Richard A. Phillips, Acton, all of Mass., assignors to Foster Grant Corporation, Leominster, Mass.

Filed Jul. 23, 1981, Ser. No. 286,402
Int. Cl.³ B29C *25/00*; B29D *11/00*
U.S. Cl. 264—341 **9 Claims**

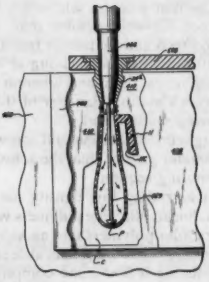
1. A method of removing haze from plastic articles made with cellulose acetate butyrate, which comprises immersing said plastic articles in a substantially water-free bath composition at least 70 weight percent of which is a combination of an active solvent and a carrier solvent, said active solvent being methyl alcohol, ethyl alcohol, propyl alcohol, butyl alcohol or any mixture thereof, said carrier solvent being ethylene glycol, glycerol, tricresyl phosphate, butyl phthalate, or any mixture thereof, and the relative proportions between said active solvent and said carrier solvent being in the range of 90–5 and 10–95 weight percent, respectively.

4,357,296

INJECTION BLOW MOLDING PROCESS

Robert X. Hafele, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 71,301, Aug. 30, 1979, Pat. No. 4,280,805.
This application Jan. 26, 1981, Ser. No. 228,276
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—532 **3 Claims**



1. A process for injection blow molding hollow plastic bodies having an injection molded integral handle, said process comprising:

a. positioning a hollow preform carrier between an open split injection mold;

b. closing said injection mold to form an injection mold cavity with a contiguous injection mold handle cavity and a preform carrier cavity, said preform cavity enclosing at least a portion of said preform carrier upon said closing of said injection mold;

c. inserting a preform pin through said preform carrier into said injection mold cavity;

d. injecting thermoplastic material into the recess defined at least partially by said injection mold cavity, said handle cavity and said preform pin to form a thermoplastic preform having a solid injection molded handle;

e. cooling said thermoplastic preform to a temperature at which it will maintain its basic shape when said injection mold is opened;

f. withdrawing said preform pin from said injection mold cavity;

g. opening said injection mold;

h. moving said injection molded preform on said preform carrier from said split injection mold to a split blow mold having a handle cavity that is larger than said handle and having a neck cavity that has a larger diameter at the point

of juncture with said handle cavity than the diameter of said preform; and

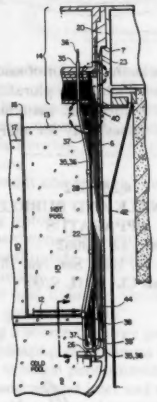
i. inflating said preform to the shape defined by said blow mold cavity while allowing said handle to move outwardly in said handle cavity as the portion of said preform adjacent said neck cavity moves outwardly into contact with the walls of said neck cavity.

4,357,297

APPARATUS FOR THERMALLY INSULATING NUCLEAR REACTOR PRIMARY VESSELS

Clive F. G. Dupen, Simsbury, Conn., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 26, 1979, Ser. No. 33,674
Int. Cl.[3] G21C *11/08, 17/00*
U.S. Cl. 376—290 8 Claims



1. In a nuclear reactor including a primary tank having a vertically extending annular side wall and containing therein a top hot pool and a bottom cold pool of coolant separated from one another by a horizontally extending barrier, an arrangement for thermally insulating the inner circumferential surface of said tank side walls, said arrangement comprising:

(a) a cylindrical metal liner located concentrically within said tank and spaced inwardly of said inner circumferential surface in confronting relationship therewith whereby to define an axially extending annular space therebetween, said space being filled with an inert gas and having an opened bottom end in fluid communication with said cold pool whereby coolant leaking into said space from either of said pools will drain to said bottom open end;

(b) means for hermetically sealing the top end of said space;

(c) a plurality of vertically extending, radially spaced apart, reflective metal plates having arcuate cross-sections located within and together extending the entire circumferential length of said annular space for reducing radiative heat transfer radially across said space, thereby thermally insulating said tank side wall from the temperatures generated by the reactor, each of said plates having a plurality of indentations in its surface for providing stand-off spacing between adjacent plates and thereby reducing convective heat transfer radially across said space and for further facilitating drainage of any liquid coolant which appears between said plates; and

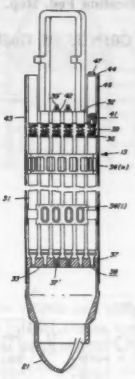
(d) means for supporting said plates in position within said space.

4,357,298

NUCLEAR FUEL ASSEMBLY SPACE ARRANGEMENT

Richard A. Wolters, Jr.; Tommy C. Lee, and Bruce Matzner, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 10, 1980, Ser. No. 195,877
Int. Cl.[3] G21C *3/18*
U.S. Cl. 376—441 13 Claims



1. A fuel assembly for use with a plurality of fuel assemblies and a neutron moderator fluid circulating through said fuel assemblies in a nuclear reactor core wherein the neutron flux density varies from relatively low neutron flux densities toward the ends of said core to a higher neutron flux density intermediate the ends of said core, said fuel assembly comprising: a plurality of elongated fuel elements; means for holding said fuel elements in a spaced array; a plurality of fuel element spacers in axially spaced locations along said fuel assembly for laterally supporting said fuel elements, said spacers being of first and second types, said first type of spacers having a relatively low neutron absorption cross section but presenting a relatively high neutron moderator fluid flow resistance, said second type of spacer having a higher neutron absorption cross section but presenting a lower neutron moderator fluid flow resistance, the spacers of said first type being axially located along said fuel assembly in regions of highest neutron flux density and the spacers of said second type being axially located along said fuel assembly in regions of lower neutron flux density.

4,357,299

BRAZING ALLOY FILLER FOR JOINING CEMENTED CARBIDE TO STEEL

Surya Pattanaik, San Jose, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 2, 1981, Ser. No. 250,526
Int. Cl.[3] C22C *9/05*
U.S. Cl. 420—487 2 Claims

1. A brazing alloy composition consisting essentially of, in percent by weight, 30 manganese, 2 nickel, 4 indium, 9 iron and the balance copper.

4,357,300

APPARATUS FOR PROCESS ANALYSIS

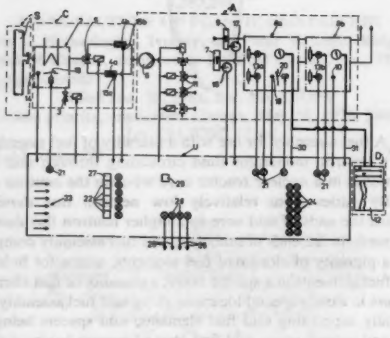
Eberhard Nicklaus, Bergheim; Heinz Warncke, Cologne; Wilhelm Pross, and Wolfgang Härtl, both of Munich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Compur-Electronic GmbH, Munich, both of, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,341

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1979, 2923627

Int. Cl.[3] G01N *35/08*; G06F *15/42*

U.S. Cl. 422—62 4 Claims



1. In an apparatus for process analysis having means for continuously extracting a sample from a process stream, means for conditioning the sample, at least one sample analyzer and a measurement display, the improvement comprising: sensors connected to at least the sample conditioning means and the sample analyzer for producing electrical signals responsive to the functional status thereof and monitoring means coupled with its inputs to the outputs of the status sensors in parallel with respect to at least the sample conditioning means and the analyzer for monitoring the analysis without affecting the data flow from the analyzer to the measurement display, the monitoring means comprising

(a) a first circuit for checking the operational status of at least the sample conditioning means and the analyzer via the status sensors,

(b) a second circuit for checking the plausibility of the measured value received from the analyzer and

(c) a third circuit for indicating a failure in response to the recognition by the first and second circuits of a deviation from a desired predetermined range.

4,357,301

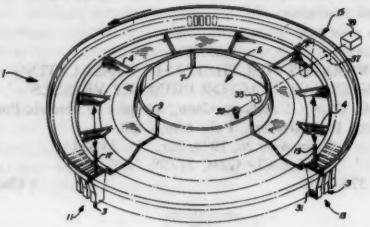
REACTION CUVETTE

Michael M. Cassaday, Peekskill, N.Y.; Herman G. Diebler, Redding, Conn.; Dario Svenjak, Fairview, N.J., and Kenneth F. Uffenheimer, Mahopac, N.Y., assignors to Technicon Instruments Corp., Tarrytown, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,845

Int. Cl.[3] G01N *21/03, 21/13*

U.S. Cl. 422—64 29 Claims



1. A cup-like receptacle, the interior of said receptacle defining at least one surface which has a plurality of inwardly extending projections of hydrophilic material, said receptacle further defining a sight passageway for analysis of said liquid.

4,357,302

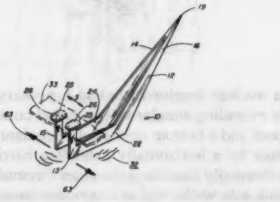
PARAFFIN WRINKLE AND BUBBLE REMOVER APPARATUS

William J. Giroir, Kenner, La. 70062

Filed Aug. 28, 1980, Ser. No. 181,967

Int. Cl.[3] B01L *9/00*

U.S. Cl. 422—99 7 Claims



1. A hand held apparatus for removing wrinkles and bubbles in a thin paraffin ribbon, comprising:

a. a pair of normally flexible handles integrally connected together at one end portion thereof;

b. a pair of elongated strut members constituting integral portions with said handles, disposed at an angle in relation to said handles and movable with respect to one another, responsive to a flexing of said handles;

c. a pair of spreader portions disposed at the opposite end of said strut members in relation to said handles, constituting integral portions with said strut members and disposed at an angle in relation to them, each spreader portion comprising:

i. an elongated spreader arm;

ii. a pair of spreader pad portions attached to the top end portions of said elongated spreader arms where the spreader arm and handles both extend in an upward direction with respect to said strut member, and where each spreader pad portion has a top surface capable of frictionally engaging and supporting, for spreading, a portion of said paraffin ribbon, and where the top sur-

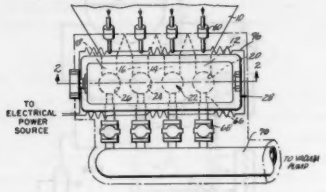
faces of the spreader pad portions are alligned such that they can spread said ribbon upon flexing of said handles.

4,357,303

APPARATUS FOR REFLUORINATING URANIUM PENTAFLUORIDE PRECIPITATE

Donald R. Hodson, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 31, 1980, Ser. No. 135,384
Int. Cl.³ B01J *8/08*
U.S. Cl. 422—159 **2 Claims**



1. Apparatus for converting uranium pentafluoride in particulate form to gaseous uranium hexafluoride, comprising:
means for providing uranium pentafluoride particles;
means for receiving, mixing and suspending said particles in a gas containing fluorine, said particles received from said providing means;
a piston-displacement compressor having:
a cylinder;
a reciprocating piston;
a first inlet to said cylinder through which said particulate uranium pentafluoride and said fluorine are charged into said cylinder;
a second inlet to said cylinder, through which a gaseous fluorine purge gas is directed;
means connecting a source of purge gas to said second inlet;
an outlet; for eliminating said gaseous uranium hexafluoride and unreacted uranium pentafluoride and said fluorine;
valve means on said second inlet and said outlet; and
means opening said valves when said gas and particulate mixture in said cylinder is substantially fully compressed by said piston to purge the compressed mixture out of said cylinder.

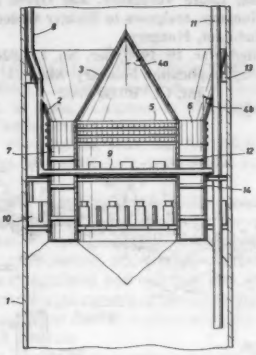
4,357,304

MOVING CATALYST BED REACTOR

Abraham A. Pegels, and Matheus M. van Kessel, both of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 30, 1981, Ser. No. 288,263
Claims priority, application United Kingdom, Jul. 30, 1980, 8024870
Int. Cl.³ B01J *8/04, 8/12, 19/24*
U.S. Cl. 422—191 **10 Claims**

1. A moving bed reactor apparatus through which solid catalyst particles forming a catalyst bed descend by the action of gravity, which apparatus comprises: (a) a vertically disposed cylindrical vessel, (b) a reactant inlet conduit communicating with an upper portion of said vessel, (c) a catalyst inlet conduit communicating with an upper portion of said vessel, (d) catalyst supporting means for at least one catalyst bed, said catalyst supporting means being disposed within said vessel below said catalyst inlet conduit, said catalyst supporting means being supported upon the inner wall of said vessel of being at least partly in the shape of the conical surface of at least one truncated cone conveying downwardly to at least one vertical outlet channel, each said outlet channel having outer circumferential walls for the combined passage of catalyst and separation of reactor effluent, said circumferential walls having a screen section for withdrawing said reactor effluent from said catalyst; said outlet channel(s) having separate outlet conduits for reactor effluent and catalyst downstream of said screen section, and wherein said vertical outlet channels further contain inner wall portions within said channels, each said inner wall portion bearing a further screen section for withdrawing of reactor effluent from said catalyst.

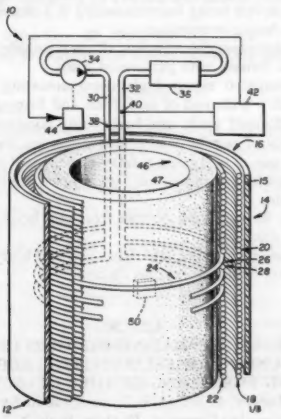


4,357,305

COAL GASIFICATION VESSEL

Billy W. Loo, Oakland, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 17, 1981, Ser. No. 244,571
Int. Cl.³ B01J *19/02*
U.S. Cl. 422—241 **17 Claims**



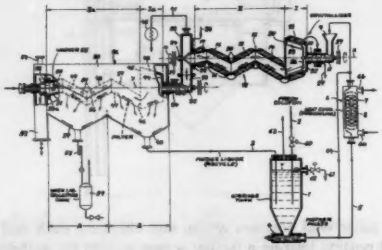
1. A vessel system capable of withstanding high temperatures and pressures comprising a plurality of shells:
one of said plurality of shells constituting a closed, pressure containing outer shell comprised of carbon fiber held in a resin binder;
means for cooling said outer shell which includes at least one separate cooling element disposed inside of and separate from said outer shell for circulating coolant; and
another of said plurality of shells constituting an inner shell disposed radially within and separate from said cooling means, said inner shell being of refractory material to withstand high temperature and being in free and open pressure communication with all of said outer shell.

4,357,306

CRYSTALLIZATION APPARATUS

István Takács; József Felméri; György Kerey; Péter Rudolf; Zoltán Bános; Endre Vereczkey, and Gyula Bosits, all of Budapest, Hungary, assignors to Richter Gedeon Vegyészeti Gyár Rt., Budapest, Hungary

Filed Mar. 19, 1980, Ser. No. 131,826
Claims priority, application Hungary, Mar. 21, 1979, RI-704
Int. Cl.³ B01D *9/02*
U.S. Cl. 422—254 5 Claims



1. A crystallization apparatus comprising:

a storage tank for mixing said solution with a mother liquor to form a mother phase;

a treating device for the formation of a crystal slurry from the mother phase by cooling, said treating device being connected to said storage tank through a pump for delivery of the mother phase to said treating device; and

a filter device for the filtration of the crystal slurry, said filter device being connected to said storage tank for feeding mother liquor containing crystals separated by said filtration into said storage tank, said treating device and said filter device being interconnected in a closed system, said filter device comprising:

a frustopyramidal prismatic drum rotatable about an axis and formed with perforated walls,

an elongated zigzag body communicating eccentrically with a wide end of said drum and formed from planar perforated walls, said body being constituted by a plurality of angularly adjoining ducts and having a terminal one of said ducts rotatable about said axis, all of said ducts having individual axes intersecting the axis of said drum,

means for receiving crystals from said body at said terminal duct, and

a housing enclosing said drum and said body for draining liquid from the crystals therein.

4,357,307

METHOD OF SEPARATING ISOTOPES IN WHICH A COMPOUNDING OF SELECTIVITY IS ACHIEVED BY LIMITING THE TIMING OF THE COLLECTION STEP

John A. Horsley, Cranford, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 21, 1979, Ser. No. 106,373
Int. Cl.³ B01D *59/00*
U.S. Cl. 423—3 12 Claims

1. A method of separating isotopes of an element including the steps of:

(1) providing molecules of a compound of said element having an isotopically shifted but overlapping infrared absorption spectrum associated with the isotopes of said element which does not change appreciably upon the absorption of photons;

(2) irradiating said molecules at an infrared absorption frequency to isotopically selectively dissociate said molecules to provide molecular fragments which appear over a time interval; and

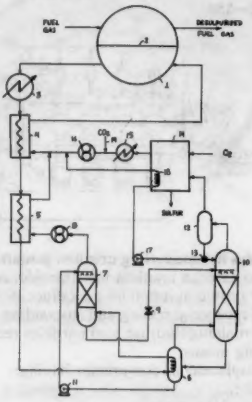
(3) collecting only those molecular fragments which dissociate within a predetermined portion of said time interval.

4,357,308

DUAL TEMPERATURE DUAL DESULFURIZATION

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Jun. 6, 1980, Ser. No. 157,239
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—210.5 4 Claims



1. In a continuous process in which a high temperature reducing gas is scrubbed of H_2S by contact with at least one molten alkali salt scrubbing medium, which is regenerated for reuse, the improvement which comprises:

a. regenerating the molten salt by contacting it with a recirculating gas stream comprised essentially of H_2O, CO_2, H_2, and CO, whereby H_2S is introduced into the recirculating gas stream;

b. scrubbing the H_2S from the recirculating gas stream using an aqueous alkaline salt scrubbing medium;

c. recycling the recirculating gas stream to further molten salt regeneration;

d. adding a makeup gas consisting essentially of CO_2 optionally admixed with H_2O to the recirculating gas stream.

4,357,309

GASEOUS REAGENT GENERATOR

Sara J. Arnold, Medicine Hat, and Kenneth D. Foster, Lac-Beauport, both of Canada, assignors to Her Majesty the Queen in right of Canada, Ontario, Canada

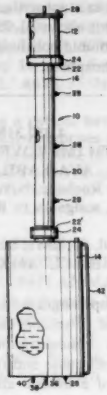
Filed Mar. 3, 1981, Ser. No. 240,158
Claims priority, application Canada, May 12, 1980, 351948
Int. Cl.³ C01B *7/18*
U.S. Cl. 423—486 20 Claims

1. A method for generating a predetermined gaseous product, derived from chemically reacting at least two reactants, at least one of the reactants being in a liquid phase at ambient room conditions and at least one of the remaining reactants being in a solid phase at said ambient conditions, said method comprising:

(a) introducing the reactant in liquid phase into a supply of the reactant in the solid phase, upon a demand for said gaseous product, at least some of the solid reactant dissolving into the liquid reactant to form a reactive solution;

(b) percolating the reactive solution by the force of gravity through a vertically oriented reaction zone heated to a preselected temperature which is sufficiently high to promote the desired chemical reaction but below the boiling temperature of the solution, a predetermined chemical

reaction occurring in the reaction zone to produce said gaseous product; and



(c) removing said gaseous product from the reaction zone to another location where said product is in demand.

4,357,310

METHOD AND COMPOSITION FOR REDUCING THE NONSPECIFIC BINDING OF RADIOIODINATED PROTEIN HORMONES

Catherine T. Chan, Lincoln, and Debra A. Gravallese, Watertown, both of Mass., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 8, 1980, Ser. No. 176,820

Int. Cl.³ A61K *43/00*

U.S. Cl. 424—1 **19 Claims**

1. In a method for the immunoassay of a hormone selected from the group consisting of prolactin, insulin, gonadotropin, growth hormone, ACTH, thyrotropin and parahormone, wherein said hormone in radioiodinated form is used as a tracer, the improvement comprising a stabilized tracer reagent consisting essentially of said radioiodinated hormone and about from 0.05 to 0.5% w/v of a nonionic detergent.

4,357,311

SUBSTRATE FOR IMMUNOASSAY AND MEANS OF PREPARING SAME

Ernest G. Schutt, Long Valley, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 3, 1980, Ser. No. 193,789

Int. Cl.³ C07D *251/02*; C07L *1/12, 89/00*; G01N *33/52*

U.S. Cl. 424—12 **7 Claims**

1. In a method for the preparation of an activated solid phase substrate for use in immunoassay procedures, the steps which comprise treating a dry microporous filter membrane having a cellulose ester base with an alkali metal methoxide in an organic solvent medium to hydrolyze at least some of the ester groups present and convert some of the free hydroxy groups thus made available to the alkali metal hydroxylate form, reacting the alkali metal hydroxylate groups of the cellulose ester with trichlorotriazine, and then removing any residual organic solvent from the solid reaction product.

3. In a method for the preparation of an activated solid phase substrate for use in immunoassay procedures, the steps which comprise treating a dry microporous filter membrane formed of a solid polymeric methanol-swellable material which includes esterified hydroxy groups in its chemical structure with an anhydrous organic solvent containing methanol to swell the polymeric structure, hydrolyzing at least some of the ester groups present and converting at least some of the hydroxy groups thus made available to the alkali metal hydroxylate form, reacting the alkali metal hydroxylate groups on said polymeric material with trichlorotriazine, and then removing any residual organic solvent from the solid polymeric reaction product.

4,357,312

METHOD OF MAKING PROLONGED RELEASE BODY

Dean S. T. Hsieh, Cambridge, and Robert S. Langer, Jr., Somerville, both of Mass., assignors to The Children's Hospital Medical Center, Boston, Mass.

Filed Jul. 16, 1981, Ser. No. 283,826

Int. Cl.³ A61K *9/22, 9/26, 31/74, 31/78*

U.S. Cl. 424—15 **9 Claims**

1. In a method of making a biologically compatible, implantable water-insoluble polymeric body for the controlled, prolonged release of a biologically active substance to a surrounding aqueous environment, said method comprising forming a liquid mixture containing said polymer, said active substance, and an organic solvent capable of dissolving said polymer, and solidifying said liquid mixture to form said polymeric body, the improvement wherein

said liquid mixture further comprises water, and said organic solvent is immiscible with water, so that said mixture is an emulsion

said solidification is carried out by cooling said liquid mixture to a temperature sufficiently low to cause the water in said mixture to freeze, thereby creating channels in said body for the release of said active substance therefrom, and

said method further includes the steps of removing said organic solvent and said water from said body.

4,357,313

RHEOLOGICALLY DESIRABLE TOOTHPASTE

Kenneth Harvey, Wilmslow, and Stephen T. Connors, Sale, both of England, assignors to Colgate Palmolive Company, New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,297

Claims priority, application United Kingdom, Dec. 19, 1979, 7943639

Int. Cl.³ A61K *7/16*

U.S. Cl. 424—49 **10 Claims**

1. A toothpaste suitable for being tubed and capped which when left uncapped has reduced hard plug formation which if formed would make it difficult to extrude the toothpaste from a tube comprising about 15–50% by weight of a dentally acceptable water-insoluble polishing material distributed in a vehicle, said vehicle containing about 45–85% by weight of a liquid phase which consists essentially of humectant including the presence of sorbitol, which sorbitol is present as sorbitol solution in amount of about 15–35% by weight of said toothpaste, and about 25–50% by weight of non-solution water, and about 5–20% of an agent which reduces drying and hard plug formation and a solid phase including about 0.5–10% by weight of gelling agent, wherein there is present as said agent of the liquid phase which reduces drying and hard plug formation polyethylene glycol having an average weight between about 900 and 1600.

4,357,314

MALTITOL CONTAINING TOOTHPASTE

Matthew J. Lynch, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Jan. 5, 1981, Ser. No. 222,300

Int. Cl.³ A61K *7/16*; A23L *1/04*

U.S. Cl. 424—49 **1 Claim**

1. A toothpaste composition comprising a non-crystallizing edible gel consisting essentially of a maltitol syrup which comprises 25–94% by weight maltitol, 5–30% by weight sorbitol, low molecular weight polysaccharides and non-fermentable sugars wherein said composition has no more than 0.05–2%

by weight reducing sugars when said maltitol syrup ingredients are calculated on a dry basis and a maltitol/sorbitol weight ratio of no less than 2/1 said syrup having a total dissolve solids content of 60–80% by weight when calculated on a wet basis, 5–10% by weight of a gelling agent having a refractive index in the range of 1.33–1.5 selected from amorphorous silica having an average particle size ranging from 3–10 microns and a surface area in the range of 300–1000 square meters per gram and up to about 15% based on the weight of the total composition of functional ingredients selected from a group consisting of soluble soaps, detergents, coloring agents, flavoring agents, buffers, preservatives, fluorides, bactericides, antibiotics, astringents and polishing agents.

4,357,315

USE OF 1-ETHOXY-1-ETHANOL ACETATE FOR AUGMENTING OR ENHANCING THE TASTE OF TOOTHPASTE

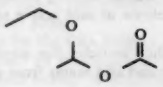
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,276

Int. Cl.³ A61K *7/16*

U.S. Cl. 424—49 **2 Claims**

1. A toothpaste comprising an aroma or taste modifying, augmenting or enhancing quantity of 1-ethoxy-1-ethanol acetate having the structure:



an in intimate admixture therewith, a toothpaste base.

4,357,316

USE OF 1-N-BUTOXY-1-ETHANOL ACETATE FOR AUGMENTING OR ENHANCING THE TASTE OF TOOTHPASTE

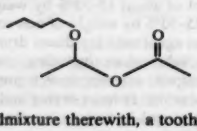
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 217,810, Dec. 18, 1980, Pat. No. 4,296,138, which is a continuation-in-part of Ser. No. 176,111, Aug. 7, 1980, Pat. No. 4,296,137. This application Jul. 29, 1981, Ser. No. 287,901

Int. Cl.³ A61K *7/16*

U.S. Cl. 424—49 **2 Claims**

1. A toothpaste comprising an aroma or taste modifying, augmenting or enhancing quantity of 1-n-butoxy-1-ethanol acetate having the structure:



and in intimate admixture therewith, a toothpaste base.

4,357,317

DENTAL CREAM COMPOSITION

Hendrik F. Weyn, Embourg, Belgium; Eric Baines, Flixton, and Kenneth Harvey, Wilmslow, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,298

Claims priority, application United Kingdom, Dec. 19, 1979, 7943642

Int. Cl.³ A61K *7/16, 7/18*

U.S. Cl. 424—52 **7 Claims**

1. A dental cream composition comprising a dental vehicle, a binary fluorine providing system which provides about 0.1–0.167% by weight fluorine from sodium monofluorophosphate and sodium fluoride wherein said sodium fluoride provides about 30–35% by weight of the fluorine in amount of about 0.03–0.058% by weight and intimately dispersed in said vehicle, and in direct contact with said binary fluorine-providing system components about 20–75% by weight of a dentally acceptable water-insoluble polishing material consisting essentially of dicalcium phosphate.

4,357,318

DENTIFRICES WITH IMPROVED SOLUBLE FLUORIDE AVAILABILITY

Nutan B. Shah, New Rochelle, N.Y., and Nicholas F. Schmidt, Brookfield, Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Filed Jul. 31, 1981, Ser. No. 288,905

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 **27 Claims**

1. A dentifrice comprising a water soluble monofluorophosphate salt as a source of soluble fluoride in a therapeutically effective anti-caries concentration, an effective abrasive amount of calcium carbonate and from about 0.3 to about 1.0 percent by weight of a dibasic alkali metal phosphate, said dentifrice being devoid of benzyl alcohol.

4,357,319

ALKENYL PHENETHYLETHERS AND USES THEREOF IN COMBATTING TOBACCO BEETLES

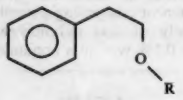
Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 238,750, Feb. 27, 1981, Pat. No. 4,328,206. This application Jan. 7, 1982, Ser. No. 337,738

Int. Cl.³ A01N *17/14*

U.S. Cl. 424—84 **3 Claims**

1. A method of attracting and destroying *Lasioderma sericorne* (F.) comprising applying to an area contaminated with said *Lasioderma serricorne* (F.) at least one phenethylether defined according to the structure:



wherein R is C_4 alkenyl, said attractant being applied to said area in an amount sufficient to attract said *Lasioderma sericorne* (F.).

4,357,320

INFECTIOUS BRONCHITIS VACCINE FOR POULTRY

Peter Apontowell, EK Leersum, and Manfred M. Krasselt, EP De Bilt, both of Netherlands, assignors to Gist-Brocades N. V., Delft, Netherlands

Filed Nov. 24, 1980, Ser. No. 209,583

Int. Cl.³ A61K *39/295, 39/215, 39/12*

U.S. Cl. 424—89 **10 Claims**

1. A combined infectious bronchitis vaccine for poultry comprising at least one first virus fluid derived from a serotype virus strain of infectious bronchitis viruses selected from the group consisting of culture Nos. CNCTC A 07/80, CNCTC A 08/80, CNCTC A 09/80, CNCTC A 010/80, CNCTC A 011/80, CNCTC A 013/80, CNCTC A 014/80, CNCTC A 015/80 and CNCTC A 016/80 deposited at the Czechoslovak National Collection of Type Cultures with the Institute of Hygiene and Epidemiology in Prague, Czechoslovia and a second virus fluid selected from the group consisting of IBV H 120 and IBV H 52 of Massachusetts type.

4,357,321

METHOD AND COMPOSITION FOR TREATING CLOTTING FACTOR INHIBITORS

William R. Thomas, Laguna Niguel, Calif., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 116,186, Jan. 28, 1980, Pat. No. 4,287,180.
This application May 11, 1981, Ser. No. 262,286
Int. Cl.[3] A61K *35/14*
U.S. Cl. 424—101 9 Claims

1. A method for treating a patient having an inhibitor of a blood clotting factor, which comprises administering to the patient a therapeutically effective dose of an aqueous composition comprising about from 37 to 110 units of F-VII-ml and about from 8 to 80 units of V-VIIa/ml.

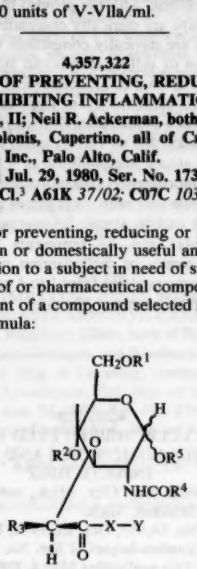
4,357,322

METHOD OF PREVENTING, REDUCING OR INHIBITING INFLAMMATION

Wendell H. Rooks, II; Neil R. Ackerman, both of Los Altos, and Albert J. Tomolonis, Cupertino, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 29, 1980, Ser. No. 173,311
Int. Cl.[3] A61K *37/02;* C07C *103/52*
U.S. Cl. 424—177 8 Claims

1. A method for preventing, reducing or inhibiting inflammation in a human or domestically useful animal which comprises administration to a subject in need of such treatment, an effective amount of or pharmaceutical composition containing an effective amount of a compound selected from those represented by the formula:



wherein:

R^1 and R^2 are the same or different and are hydrogen or optionally substituted acyl;

R^3 is hydrogen or lower alkyl;

R^4 is optionally substituted aryl or optionally substituted alkyl;

R^5 is hydrogen or optionally substituted aryl or optionally substituted alkyl;

X is an amino acyl moiety; and

Y is D-glutamic or D-aspartic acid, or a mono-, di-, or mixed alkyl ester, amide, or lower alkyl amide thereof.

4,357,323

POLYSACCHARIDE RBS SUBSTANCE AND ANTITUMOR AGENT CONTAINING SAME

Eichi Soma; Kohei Kobayashi; Takuro Karakawa; Shigeyoshi Kato, all of Tokyo, and Kiichi Uchida, Fujisawa, all of Japan, assignors to Sapporo Breweries Limited, Tokyo; Etsuo Ito, Urasoe and Daicel Chemical Industries, Ltd., Sakai, all of, Japan

Filed Aug. 1, 1980, Ser. No. 174,536
Claims priority, application Japan, Aug. 13, 1979, 54-102216
Int. Cl.[3] C08B *37/00;* A61K *31/73*
U.S. Cl. 424—180 2 Claims

2. A pharmaceutical composition effective in inhibiting the growth of Sarcoma 180 ascites tumors, Erlich ascites tumors, and tumor cells (SV 40-transformed C3H-2K cells) consisting essentially of polysaccharide RBS substance and pharmaceutically acceptable acid-addition salts thereof in a pharmaceutically effective amount, and a pharmaceutically acceptable vehicle, said polysaccharide RBS substance (1) having the following properties:

it does not pass through a semipermeable membrane;

it is insoluble in alcohol, acetone, hexane, benzene, ethyl acetate, dimethylsulfoxide, ligroin, carbon tetrachloride, chloroform and ether, and is soluble or highly soluble in water;

a 1% aqueous solution or suspension is neutral or slightly acidic;

it reacts positively in the following reactions: the Molisch reaction, the anthrone-sulfuric acid reaction, the tryptophane-sulfuric acid reaction, the crystein-sulfuric acid reaction, the chromotrope-sulfuric acid reaction, the phenol-sulfuric acid reaction, the carbazole-sulfuric acid reaction, the biuret reaction, the ninhydrin reaction and the Lowry-Folin reaction; and negatively in the Elson-Morgan reaction and the starch-iodine reaction;

it has the ultraviolet absorption spectrum depicted in FIG. 1 and the infrared absorption spectrum depicted in FIG. 2; and

(2) containing glucose units as the sugar component, said glucose units being bonded by α-1,6-glucoside bonds as the main chain and said main chain is branched.

4,357,324

PRODRUG DERIVATIVES OF 9β-D-ARABINOFURANOSYL-2-FLUOROADENINE

John A. Montgomery, and Anita T. Shortnacy, both of Birmingham, Ala., assignors to The United States of America as represented by the Department of health and Human Services, Washington, D.C.

Filed Feb. 24, 1981, Ser. No. 237,617
Int. Cl.[3] A61K *31/70;* C07H *19/18, 19/20*
U.S. Cl. 424—180 7 Claims

2. A method for treating L1210 cancer in mice by administration of an aqueous solution of an effective amount of an agent consisting of 5'-O-formyl derivative of O-β-D-arabinofuranosyl-2-fluoroadenine.

4,357,325

METHODS OF CONTROLLING PASTEURELLA INFECTIONS

Earl E. Ose, Greenfield, and Herbert A. Kirst, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 20, 1981, Ser. No. 255,576
Int. Cl.[3] A61K *31/71;* C07H *17/04*
U.S. Cl. 424—180 24 Claims

1. A method for controlling Pasteurella infections which comprises administering to an infected or susceptible warm-blooded animal an effective amount of a composition comprising (1) a suitable pharmaceutical vehicle and (2) a compound selected from the group consisting of desmycosin, lactenocin, cirramycin A_1, 23-deoxy-5-O-mycaminosyltylonolide, antibiotic M-4365 G_2, 9-dihydrodesmycosin, 9-dihydrolactenocin, 20-dihydrodesmycosin, 20-dihydrolactenocin, rosaramicin, and the pharmaceutically acceptable acid addition salts of these compounds.

4,357,326

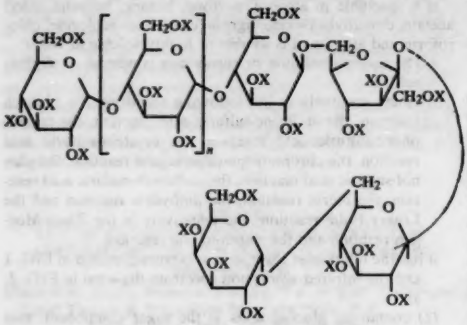
MULTI-GLUCOPYRANOSYL-FRUCTOFURANOSYL-GALACTOPYRANOSYL-GLUCOPYRANOSIDE SULFATE SALTS AND METHODS OF USE

Vijay G. Nair, New York, N.Y.; Joseph P. Joseph, Montvale, N.J., and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 28, 1981, Ser. No. 297,389
Int. Cl.[3] A61K *31/725;* C07H *5//08*
U.S. Cl. 424—180 16 Claims

6. A method of inhibiting the complement system in a body fluid which comprises subjecting said body fluid to the action of an effective complement inhibiting amount of a pharmaceu-

tically acceptable compound selected from those of the formula:



wherein n is an integer from zero to five, inclusive; X is $-SO_3A$; and A is a pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6).

4,357,327

HETEROCYCLIC SUBSTITUTED TRIAZOLYL PHOSPHOROUS COMPOUNDS AND THEIR USE AS INSECTICIDES

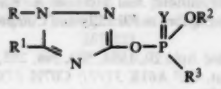
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 84,697, Oct. 15, 1979, Pat. No. 4,298,602, which is a continuation-in-part of Ser. No. 951,923, Oct. 13, 1978, abandoned. This application May 4, 1981, Ser. No. 260,533

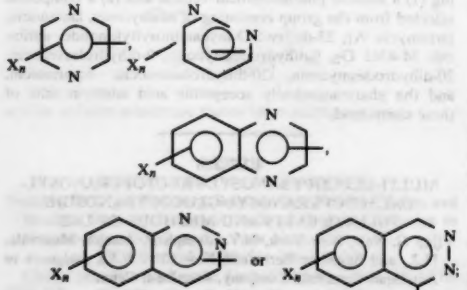
Int. Cl.[3] **C07D** *237/28, 237/30, 241/40;* **A61K** *31/495*

U.S. Cl. 424—200 **27 Claims**

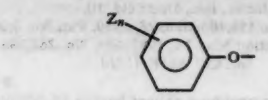
1. A compound corresponding to the formula



wherein R represents a nitrogen containing heterocyclic radical corresponding to one of the formulae



each X independently represents chlor, fluoro, bromo, nitro, alkyl of 1 to 4 carbon atoms, amino, mono- or dialkylamino wherein each alkyl group independently contains from 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, cyano, trifluoromethyl, trichloromethyl, phenoxy or substituted phenoxy of the formula



wherein each Z independently represents chloro, fluoro, bromo, nitro, cyano, alkoxy of 1 to 4 carbon atoms or alkylthio of 1 to 4 carbon atoms, with the proviso that when either n is 2 or 3, all X groups are sterically compatible with each other and all Z groups are sterically compatible with each other; Y represents oxygen or sulfur; each n can independently represent an integer of from 0 to 3, inclusive; R^1 represents hydrogen, chloro, fluoro, bromo, alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, phenylthio, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, thiocyanato, trifluoromethyl, trichloromethyl, amino, mono- or dialkylamino wherein each alkyl group independently contains from 1 to 4 carbon atoms; R^2 represents methyl, ethyl, propyl or isobutyl and R^3 represents methoxy, ethoxy, propoxy, ethyl, mono- or dialkylamino wherein each alkyl group independently contains from 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms or phenyl.

4,357,328

HETEROCYCLIC SUBSTITUTED TRIAZOLYL PHOSPHOROUS COMPOUNDS AND THEIR USE AS INSECTICIDES

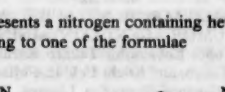
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 84,697, Oct. 15, 1979, Pat. No. 4,298,602, which is a continuation-in-part of Ser. No. 951,923, Oct. 13, 1978, abandoned. This application May 4, 1981, Ser. No. 260,550

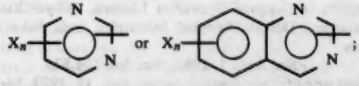
Int. Cl.[3] **A01N** *57/16, 57/24, 57/32;* **C07F** *9/65*

U.S. Cl. 424—200 **21 Claims**

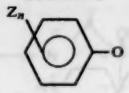
15. A method for the kill and control of insects which comprises contacting said insects or their habitat with a composition containing as the active ingredient, an insecticidally effective amount of an active compound corresponding to the formula



wherein R represents a nitrogen containing heterocyclic radical corresponding to one of the formulae



each X independently represents chloro, fluoro, bromo, nitro, alkyl of 1 to 4 carbon atoms, amino, mono- or dialkylamino wherein each alkyl group independently contains from 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, cyano, trifluoromethyl, trichloromethyl, phenoxy or substituted phenoxy of the formula



wherein each Z independently represents chloro, fluoro, bromo, nitro, cyano, alkoxy of 1 to 4 carbon atoms or alkylthio of 1 to 4 carbon atoms, with the proviso that when either n is 2 or 3, all X groups are sterically compatible with each other and all Z groups are sterically compatible with each other; Y represents oxygen or sulfur; each n can independently represent an integer of fro 0 to 3, inclusive; R^1 represents hydrogen, chloro, fluoro, bromo, alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, phenylthio, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, thiocyanato, trifluoromethyl, trichloromethyl, amino, mono- or dialkylamino wherein each alkyl group independently contains from 1 to 4 carbon atoms; R^2 represents methyl, ethyl, propyl or isobutyl and R^3 represents methoxy, ethoxy, propoxy, ethyl, mono- or dialkylamino wherein each alkyl group independently contains from 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms or phenyl.

4,357,329

COMBATING PESTS WITH N-PHOSPHONYLCARBONYL-CARBAMATES

Gerhard Heywang; Engelbert Kühle, both of Bergisch-Gladbach; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

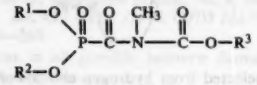
Filed Jun. 22, 1981, Ser. No. 276,406

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026326

Int. Cl.³ A01N *57/24, 57/22;* C07F *9/40*

U.S. Cl. 424—212 **10 Claims**

1. An N-phosphonylcarbonyl-N-methylcarbamic acid ester of the formula

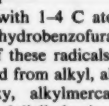


in which

R^1 and R^2 can be identical or different and each represents straight-chain or branched alkyl with 1–8 C atoms, alkenyl with 3–6 C atoms or alkynyl with 3–6 C atoms, it being possible for R^1 and R^2 optionally to be substituted by 1–3 halogen atoms, and

R^3 represents alkyl with 1–4 C atoms, phenyl, naphthyl, benzodioxolanyl dihydrobenzofuranyl or indanyl, it being possible for any of these radicals to carry one or more substituents selected from alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkynoxy, alkylmercapto, alkenylmercapto, alkynylmercapto and dialkylamino with in each case up to 4 C atoms, and trihalogenomethyl, halogen, nitro, cyano, cycloalkyl, formamidino, dioxanyl and dioxolanyl, or

R^3 represents the radical of the formula



in which

R^4 and R^5 can be identical or different and each represents alkyl, alkoxy or alkylthio, with in each case 1 to 4 carbon atoms, cyano, alkoxycarbonyl or alkylthioalkyl with 2 to 4 carbon atoms, dialkylcarbamoyl or dialkoxyphosphonyl, with 1 to 4 carbon atoms per alkyl group, or triazolyl, or

R^4 and R^5, together with the C atom to which they are bonded, form a dithiolane, dithiane, oxythiolane or oxathiane ring which is optionally substituted by methyl or phenyl.

9. A method of combating, anthropods comprising applying to the arthropods, or to a habitat thereof, an arthropodically effective amount of an ester according to claim 1.

4,357,330

PHARMACEUTICAL COMPOSITIONS

James S. Fleming, Jr., Manlius, and Joseph P. Buyniski, Syracuse, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Jul. 30, 1981, Ser. No. 288,639

Int. Cl.³ A61K *31/625*

U.S. Cl. 424—232 **5 Claims**

1. An oral pharmaceutical composition having an inhibitory activity on blood platelet aggregation consisting essentially of anagrelide and acetylsalicyclic acid, wherein the weight ratio of acetylsalicyclic acid to anagrelide is from about 30:1 to about 2468:1.

4,357,331

7αMETHOXYCEPHALOSPORIN DERIVATIVES

Katsuyoshi Iwamatsu; Shigeharu Inoue; Keinosuke Miyauchi; Shinichi Kondo, all of Yokohama; Shigeo Seki, Tokyo, and Yujiro Yamada, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

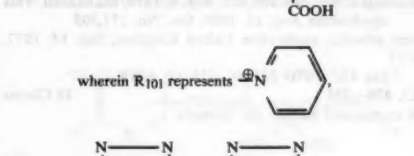
Filed Dec. 17, 1979, Ser. No. 104,220

Claims priority, application Japan, Dec. 18, 1978, 53-154997

Int. Cl.³ C07D *501/36;* A61K *31/545*

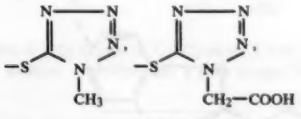
U.S. Cl. 424—246 **7 Claims**

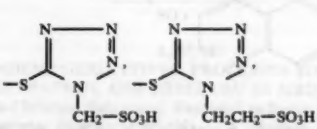
1. A 7α-methoxycephalosporin derivative of the formula (I-a):

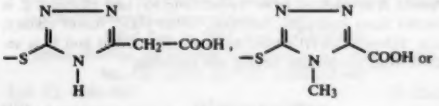


(I-a)

wherein R_{101} represents







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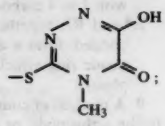


R_{201} represents a hydrogen atom or a carboxy group; R_3 represents a hydrogen atom, a carbamoyl group or a lower acyl group; or a pharmaceutically acceptable salt thereof.

4,357,332

SUBSTITUTED PIPERAZINES HAVING IMMUNE REGULANT ACTIVITY

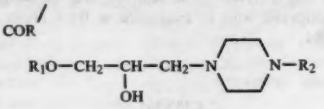
Allen R. Kraska, East Lyme, and Joseph G. Lombardino, Niantic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed May 5, 1980, Ser. No. 146,846

Int. Cl.³ A61K *31/495;* C07D *295/08*

U.S. Cl. 424—250 **7 Claims**

1. A compound of the formula



and the pharmaceutically acceptable addition salts thereof, wherein R_1 and R_2 are each benzyl or monosubstituted benzyl, said substituent being selected from alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, chloro, bromo and fluoro.

2. A method of regulating cell-mediated immunity in a warm blooded animal comprising administering to said animal an immune-regulant effective amount of a compound of claim **1**.

4,357,333

N-SUBSTITUTED-2-(8-HALO AND TRIFLUOROMETHYL 4-QUINOLYLAMINO)BENZAMIDES AND ANALGESIC USE THEREOF

John L. Archibald, Windsor, and John T. A. Boyle, Maidenhead, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

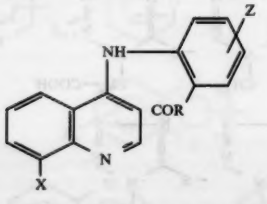
Continuation of Ser. No. 939,101, Sep. 1, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 177,305

Claims priority, application United Kingdom, Sep. 14, 1977, 38264/77

Int. Cl.³ C07D *215/46, 403/12;* A61K *31/47*

U.S. Cl. 424—258 **13 Claims**

1. A compound having the formula



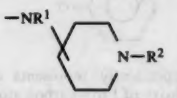
(IV)

or a pharmaceutically acceptable acid addition salt thereof, wherein X is selected from trifluoromethyl and halogen, Z is selected from hydrogen, halogen, lower alkyl, lower alkoxy, nitro, di(lower alkyl) amino and trifluoromethyl and R is selected from the groups having the formulae

$$-NR^1-A-NR^2R^3 \quad \text{(VI)}$$

-continued

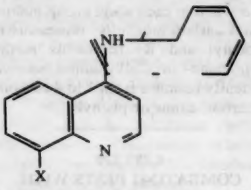
and



(VII)

wherein R^1 is selected from hydrogen and lower alkyl, R^2 is lower alkyl, R^3 is lower alkyl and A is lower alkylene.

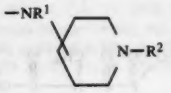
12. A method of providing analgesia in a mammal in need thereof, which comprises administering to said mammal an analgesic effective dose of a pharmaceutical composition comprising a pharmaceutical acceptable carrier and an active amount of a compound having the formula:



or a pharmaceutically acceptable acid addition salt thereof, wherein X is selected from trifluoromethyl and halogen, Z is selected from hydrogen, halogen, lower alkyl, lower alkoxy, nitro, di(lower alkyl) amino and trifluoromethyl and R is selected from the groups having the formulae

$$-NR^1-A-NR^2R^3$$

and



where R^1 is selected from hydrogen and lower alkyl, R^2 is lower alkyl, R^3 is lower alkyl and A is lower alkylene.

4,357,334

USE OF VLB 3-(2-CHLOROETHYL) CARBOXAMIDE IN TREATING NEOPLASMS

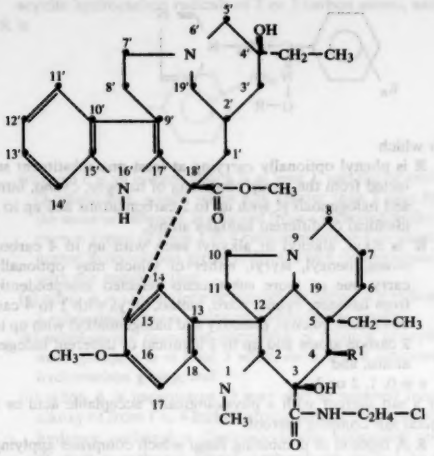
Jean C. Miller, and Gerald E. Gutowski, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 20, 1980, Ser. No. 132,246

Int. Cl.³ A61K *31/475;* C07D *519/04*

U.S. Cl. 424—262 **5 Claims**

1. The method of treating neoplasms which comprises administering to a mammal suffering from a vindesine-susceptible neoplasm selected from the group consisting of melanoma, adenocarcinoma, mammary carcinoma, lymphosarcoma, osteogenic sarcoma and leukemia, an antineoplastically-effective amount of a compound of the formula:



wherein R^1 is OH or acetoxy and pharmaceutically-acceptable acid addition salt thereof.

4,357,335

SUBSTITUTED PYRIDINE METHYL ESTERS OF DIMETHYL CYCLOPROPANE CARBOXYLIC ACIDS AND THEIR USE AS INSECTICIDES

Jacques Martel, Bondy; Jean Tessier, Vincennes; Andre Teche, Paris, and Jean-Pierre Demoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

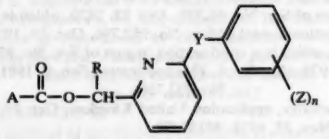
Filed Jul. 6, 1981, Ser. No. 280,547

Claims priority, application France, Jul. 4, 1980, 80 14967

Int. Cl.³ A61K *31/44;* **C07D** *213/55*

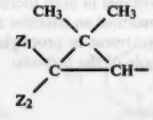
U.S. Cl. 424—263 **28 Claims**

1. An ester in all possible isomeric forms and mixtures thereof of the formula

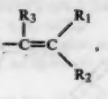


I

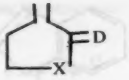
wherein A is



R is selected from the group consisting of hydrogen, —CN and —C≡CH, Y is selected from the group consisting of oxygen and sulfur, Z is selected from the group consisting of alkyl and alkoxy of 1 to 4 carbon atoms, alkylthio and alkylsulfonyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 4 carbon atoms, 3,4-methylenedioxy, chlorine, fluorine and bromine, n is an integer of 0, 1 or 2, Z_1 is hydrogen and Z_2 is



R_3 is selected from the group consisting of hydrogen and halogen, R_1 and R_2 are individually alkyl of 1 to 8 carbon atoms or taken together with the carbon they are attached to form cycloalkyl of 3 to 6 carbon atoms or



X is selected from the group consisting of oxygen and sulfur.

4,357,336

CERTAIN 2,2-DIMETHYL-3-(ETHENYL OR PROPENYL)-CYCLOPROPANE CARBOXYLIC ACID ESTERS OF THE PYRIDYL-LOWER ALKYL SERIES HAVING INSECT REPELLING PROPERTIES

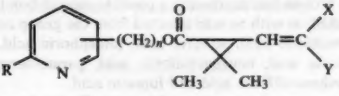
Rayman Y. Wong, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 21, 1981, Ser. No. 332,981

Int. Cl.³ A01N *43/40;* **C07D** *213/55*

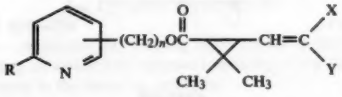
U.S. Cl. 424—263 **18 Claims**

1. A compound having the formula



in which R is hydrogen or C_1–C_4 alkyl; X and Y are independently halogen or methyl; and n is an integer from 1 to 3.

12. A method of repelling insects from a locus to be protected therefrom, comprising applying to said locus an effective insect repelling amount of a compound having the formula



in which R is hydrogen or C_1–C_4 alkyl; X and Y are independently halogen or methyl; and n is an integer from 1 to 3.

4,357,337

INDENE DERIVATIVES, PROCESSES FOR THEIR PREPARATION, AND THEIR USE AS MEDICAMENTS

Marie-Christine Dubroeucq, Enghien-Les-Bains; Claude G. A. Gueremy, Houilles; Christian L. A. Renault, Taverny, and Gerard R. Le Fur, Plessis Robinson, all of France, assignors to Pharmindustrie, Gennevilliers, France

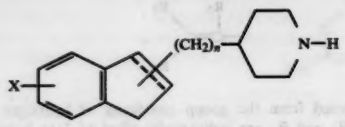
Filed Jun. 8, 1981, Ser. No. 271,065

Claims priority, application France, Jun. 13, 1980, 80 13145

Int. Cl.³ C07D *211/22;* **A61K** *31/445*

U.S. Cl. 424—267 **15 Claims**

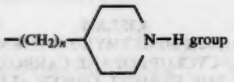
1. A compound of the formula:



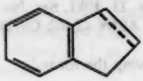
(I)

in which n is a whole number equal to 1, 2 or 3, X is fixed in position 4, 5, 6 or 7 on the cycle

and represents a hydrogen atom, a halogen atom or an alkyl, alkoxy or alkylthio group having 1 to 4 carbon atoms, the



is fixed in position 2 or 3 on the cycle



and the broken line represents a possible second bond, and its salt of addition with an acid selected from the group consisting of hydrochloric acid, sulfuric acid, phosphoric acid, formic acid, acetic acid, benzenesulfonic acid, paratoluenesulfonic acid, methanesulfonic acid and fumaric acid.

15. A process for treating a human suffering from depression, migraine or pain which comprises orally administering to said human 15 to 250 mg per day of a compound corresponding to formula (I) of claim 1 or a salt thereof with a pharmaceutically acceptable acid.

4,357,338

COMBATING FUNGI WITH 1-PHENYL-1-OXIMINO-2-(1,2,4-TRIAZOL-1-YL)-ETHANES

Wolfgang Krümer; Karl H. Büchel; Helmut Timmler, all of Wuppertal; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 22,913, Mar. 22, 1979, Pat. No. 4,264,772. This application Nov. 7, 1980, Ser. No. 204,986

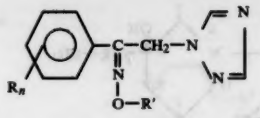
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816817

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.³ A01N *43/64*; C07D *249/08*

U.S. Cl. 424—269 **8 Claims**

1. A 1-phenyl-1-oximino-2-(1,2,4-triazol-1-yl)-ethane of the formula



in which

R is phenyl optionally carrying at least one substituent selected from the group consisting of halogen, cyano, nitro and halogenoalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms,

R′ is alkyl, alkenyl or alkynyl each with up to 4 carbon atoms, benzyl, styryl, either of which may optionally carry one or more substituents selected independently from halogen, cyano, nitro, amino, alkyl with 1 to 4 carbon atoms, phenyl, phenoxy and halogenoalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms, and

n is 0, 1, 2 or 3,

or a salt thereof with a physiologically acceptable acid or a metal salt complex thereof.

6. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,357,339

CONTROL OF PINE BEETLES WITH 1,5-DIMETHYL-6,7-DIAZABICYCLO[3.2.1]OCT-6-ENE

R. Marshall Wilson, Cincinnati, Ohio, and John W. Rekers, Spartanburg, S.C., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 140,206, Apr. 14, 1980, Pat. No. 4,291,051. This application Dec. 22, 1980, Ser. No. 218,629

Int. Cl.³ A01N *43/56*

U.S. Cl. 424—273 P **2 Claims**

2. A method of limiting the infestation of a wooded area by western or southern pine beetles comprising treating the infested area with an effective amount of 1,5-dimethyl-6,7-diazabicyclo[3.2.1]oct-6-ene.

4,357,340

IMIDAZOLE DERIVATIVES AND ANGINA PECTORIS

Peter B. Thorogood, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 67,379, Aug. 17, 1979, which is a continuation-in-part of Ser. No. 952,796, Oct. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 936,407, Aug. 24, 1978, abandoned. This application Feb. 9, 1981, Ser. No. 232,730

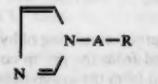
Claims priority, application United Kingdom, Oct. 19, 1977, 43512/77; Nov. 27, 1978, 46157/78

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **5 Claims**

1. A method of prevention, treatment or prophylaxis of angina pectoris in a mammal in need thereof which comprises administering to said mammal an effective amount of an angina pectoris prevention, treatment or prophylaxis

1-substituted-imidazole of the formula:

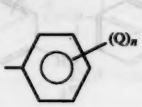


(I)

in which

A is selected from the group consisting of straight or branched, saturated, acyclic hydrocarbon radicals of 1, 2

or 3 carbon atoms, and straight or branched unsaturated acyclic hydrocarbon radicals of 2 or 3 carbon atoms, and R is



wherein n is an integer which is at least 1, and the or each Q substituent, which when n is greater than 1 may be the same or different, is selected from a saturated hydrocarbon group of from 1 to 4 carbon atoms and an unsaturated hydrocarbon group of from 2 to 4 carbon atoms, with the provisos that

(a) when A is a methylene or ethylidene group, n is at least 2 when each Q is a saturated hydrocarbon group;

(b) when A is a branched propylene or straight propylidene group, n is at least 3 when each Q is a saturated hydrocarbon group; and

(c) when A is unsaturated Q may also be selected from alkoxy of from 1 to 4 carbon atoms; halo; trihalomethyl; hydroxy; carboxyl; a pharmaceutically acceptable salt of such a carboxyl group; carboalkoxy with 1 to 4 carbon atoms in the alkoxy portion thereof; $—NR^6R^7$ or $—CONR^6R^7$; in which R^6 and R^7 may be the same or different and are hydrogen or alkyl of from 1 to 4 carbon atoms, with the further proviso that when n is 1, Q is not a saturated alkyl group;

the substituted-imidazole being the free base or a pharmaceutically acceptable acid addition salt thereof.

4,357,341

SPECIFIC IRREVERSIBLE ANTAGONISM OF HISTAMINE RECEPTORS BY PHOTOAFFINITY ACTUATED COMPOUNDS

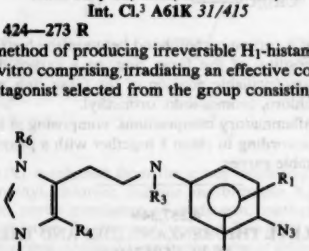
Jeffrey S. Fedan; John P. O'Donnell, and G. Kurt Hogaboom, all of Morgantown, W. Va., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C., a part interest

Filed May 22, 1981, Ser. No. 266,462

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **6 Claims**

1. A method of producing irreversible H_1-histamine antagonism in vitro comprising irradiating an effective concentration of an antagonist selected from the group consisting of



(I)

wherein R_1 is NO_2 and R_2 is H and R_1 is ortho to the amine group, and wherein R_3, R_4, R_5 and R_6 are H or lower alkyl groups with not more than two of the four positions substituted with a lower alkyl group with visible light in the presence of histamine receptor ligands.

4,357,342

1-AZABICYCLO[3.2.0]HEPTAN-3,7-DIONE-2-CARBOXYLIC ACID

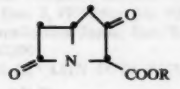
Burton G. Christensen, Scotch Plains, and Ronald W. Ratcliffe, Matawan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 145,916, May 2, 1980, abandoned, which is a continuation of Ser. No. 26,978, Apr. 4, 1979, abandoned, which is a continuation of Ser. No. 843,377, Oct. 19, 1977, abandoned. This application Oct. 8, 1980, Ser. No. 195,161

Int. Cl.³ C07D *487/04;* A61K *31/40*

U.S. Cl. 424—274 **2 Claims**

1. A compound having the structure:



wherein: R is hydrogen; an alkali, alkaline earth, or amine cation selected from the group consisting of: sodium, potassium, calcium, benzhydrylamine, N-benzyl-2-phenethylamine, N,N'-dibenzylethylenediamine, procaine; or an ester moiety selected from: methallyl, 3-methylbutenyl, 3-butenyl, methylthioethyl, benzyl, p-t-butylbenzyl, m-phenoxybenzyl, p-pivaloyloxy-benzyl, p-nitrobenzyl, pivaloyloxymethyl, 3-phthalidyl, acetoxymethyl, propionyloxymethyl, acetylthiomethyl, pivaloylthiomethyl, allyl, 4-butenyl, 2-butenyl, 3-methyl-2-butenyl, phenacyl, acetoxyacetylmethyl, methoxymethyl, p-acetoxybenzyl, p-pivaloyloxybenzyl, p-isopropoxybenzyl, 5-indanylmethyl, 5-indanyl, benzyloxymethyl, ethylthioethyl, methylthiopropyl, methoxycarbonyloxymethyl, ethoxycarbonyloxymethyl, dimethylaminoacetoxymethyl, crotonolacton-3-yl, and acetamidomethyl.

4,357,343

NUTRITIONAL COMPOSITION FOR MANAGEMENT OF RENAL FAILURE

David C. Madsen, Libertyville, and Hugh N. Tucker, Chicago, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 26, 1981, Ser. No. 277,526

Int. Cl.³ A61U *31/40, 31/195*

U.S. Cl. 424—274 **11 Claims**

1. A composition for treating renal failure or deficiency, comprising an amino acid mixture consisting of the following amino acids in the stated proportions:

Amino Acid	Mole Percent Range about from
L-Leucine	8.6 to 8.9
L-Phenylalanine	5.6 to 5.8
L-Methionine	7.2 to 6.5
L-Lysine (free base)	5.8 to 6.0
L-Isoleucine	7.2 to 7.5
L-Valine	12.1 to 13.6
L-Histidine	5.2 to 6.9
L-Threonine	5.9 to 6.3
L-Tryptophan	1.4 to 1.5
L-Alanine	11.7 to 12.4
Glycine	7.7 to 8.9
L-Arginine	5.6 to 7.0
L-Proline	5.9 to 6.2
L-Tyrosine	0.3 to 0.6
L-Serine	5.5 to 6.3

4,357,344
POLYBUTYLBENZYLPHENOLS AND BENZYL-3,4-METHYLENEDIOXYBENZENES IN INSECT POPULATION CONTROL

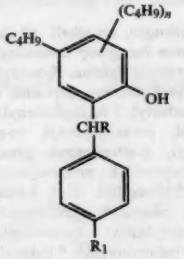
Leonard Jurd, Berkeley, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 29, 1979, Ser. No. 25,132
Int. Cl.³ A01N *43/16, 31/08*
U.S. Cl. 424—282 **11 Claims**

1. A method of inhibiting procreation in insects, which comprises

administering to the insects a compound selected from the group consisting of

(a) compounds of the structure



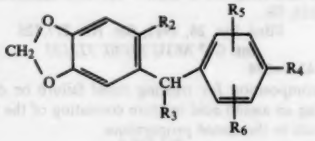
wherein

n is an integer from 1 to 3,

R is hydrogen or lower alkyl containing from 1 to 6 carbon atoms, and

R_1 is hydrogen, lower alkyl containing from 1 to 6 carbon atoms or lower alkoxy containing from 1 to 6 carbon atoms,

(b) compounds of the structure



wherein

R_2 is hydrogen, lower alkyl containing from 1 to 6 carbon atoms, lower alkoxy containing from 1 to 6 carbon atoms, or lower alkenyl containing from 2 to 6 carbon atoms,

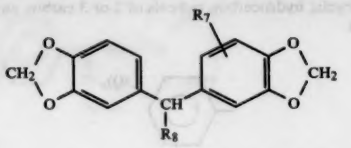
R_3 is hydrogen or lower alkyl containing from 1 to 6 carbon atoms,

R_4, R_5, and R_6 are independently hydrogen, lower alkyl containing from 1 to 6 carbon atoms, and lower alkoxy containing from 1 to 6 carbon atoms, and wherein,

if R_2 is hydrogen, then R_5 and R_6 must be independently lower alkyl containing from 1 to 6 carbon atoms or lower alkoxy containing from 1 to 6 carbon atoms, and wherein,

if R_4, R_5, and R_6 are hydrogen and R_3 is methyl then R_2 must be lower alkoxy containing from 2 to 5 carbon atoms,

(c) compounds of the structure

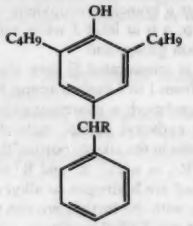


wherein

R_7 is lower alkyl containing from 1 to 6 carbon atoms or lower alkoxy containing from 2 to 6 carbon atoms or lower alkenyl containing from 2 to 6 carbon atoms and

R_8 is hydrogen or lower alkyl containing from 1 to 6 carbon atoms, and

(d) compounds of the structure



wherein

R is hydrogen or lower alkyl containing from 1 to 6 carbon atoms,

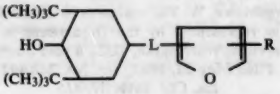
said compound being administered in an amount insufficient to kill the insects but sufficient to inhibit procreation therein.

4,357,345
SUBSTITUTED FURANS

George G. I. Moore, Houlton, Wis., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Nov. 23, 1981, Ser. No. 324,064
Int. Cl.³ A61K *31/34;* C07D *307/42*
U.S. Cl. 424—285 **15 Claims**

1. Compounds of the formula:



wherein L is a carbon-carbon bond between the benzene ring and the 2-position of the furan ring, or a carbonyl radical bonded to any available position of the furan ring, and R is hydrogen, chloro, bromo, iodo, or methyl.

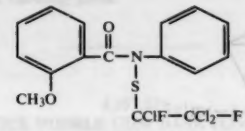
13. Antiinflammatory compositions, comprising at least one compound according to claim 1 together with a pharmaceutically acceptable carrier.

4,357,346
N-HALOALKYL THIOBENZANILIDES AND THEIR USE AS FUNGICIDES

Hsiao-Ling M. Chin, and Ferenc M. Pallos, both of Walnut Creek, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 8, 1981, Ser. No. 223,469
Int. Cl.³ C07C *83/10;* A01N *31/08*
U.S. Cl. 424—298 **3 Claims**

1. A compound having the formula



4,357,347

PESTICIDAL PHENYLCARBAMOYLBENZIMIDATES

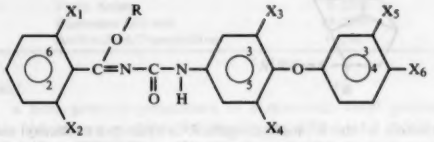
Stephen J. Nelson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 233,009, Feb. 9, 1981, abandoned. This application Dec. 4, 1981, Ser. No. 326,895

Int. Cl.³ A01N *37/28, 37/34;* C07C *119/00, 121/78*

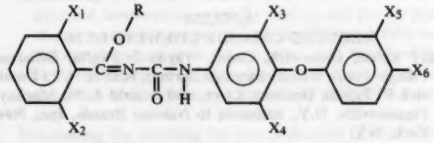
U.S. Cl. 424—298 44 Claims

1. A compound of the formula:



wherein X_1 is selected from the group consisting of methyl, trifloromethyl, chlorine, fluorine and bromine; X_2 is selected from the group consisting of hydrogen, methyl, trifluoromethyl, chlorine, fluorine and bromine; R is alkyl of from 1 to 5 carbon atoms; X_3 and X_4 can be the same or different and are selected from the group consisting of hydrogen, chlorine and bromine; X_5 is selected from the group consisting of hydrogen, chlorine, bromine and trifluoromethyl; and X_6 is selected from the group consisting of cyano and nitro; with the proviso that when X_1 and X_2 are chlorine or when X_1 is fluorine and X_2 is hydrogen then R, X_3, X_4, X_5 and X_6 are respectively not 1-methylethyl, chlorine, hydrogen, chlorine and nitro; with the further proviso that when X_1 is fluorine and X_2 is hydrogen then R, X_3, X_4, X_5 and X_6 are respectively not 1-methylethyl, chlorine, hydrogen, hyrogen and nitro; and with the further proviso that when X_1 is fluorine or methyl and X_2 is hydrogen then R, X_3, X_4, X_5 and X_6 are respectively not ethyl, hydrogen, hydrogen, hydrogen and nitro; and with the proviso that when X_1 and X_2 are florine, then R, X_3, X_4, X_5 and X_6 are respectively not ethyl, chlorine, hydrogen, chlorine and nitro.

32. The method for controlling insect pests which comprises contacting susceptible insect pests with an effective amount of a compound of the formula:



wherein X_1 is selected from the group consisting of methyl, trifloromethyl, chlorine, fluorine and bromine; X_2 is selected from the group consisting of hydrogen, methyl, trifluoromethyl, chlorine, fluorine and bromine; R is alkyl of from 1 to 5 carbon atoms; X_3 and X_4 can be the same or different and are selected from the group consisting of hydrogen, chlorine and bromine; X_5 is selected from the group consisting of hydrogen, chlorine, bromine and trifluoromethyl; and X_6 is selected from the group consisting of cyano and nitro; with the proviso that when X_1 and X_2 are chlorine or when X_1 is florine and X_2 is hydrogen then R, X_3, X_4, X_5 and X_6 are respectively not 1-methylethyl, chlorine, hydrogen, chlorine and nitro; with the further proviso that when X_1 is fluorine and X_2 is hydrogen then R, X_3, X_4, X_5 and X_6 are respectively not 1-methylethyl, chlorine, hydrogen, hydrogen and nitro; and with the further proviso that when X_1 is florine or methyl and X_2 is hydrogen then R, X_3, X_4, X_5 and X_6 are respectively not ethyl, hydrogen, hydrogen, hydrogen and nitro; and with the proviso that when X_1 and X_2 are florine, then R, X_3, X_4, X_5 and X_6 are respectively not ethyl, chlorine, hydrogen, chlorine and nitro.

4,357,348

INSECTICIDAL AND/OR ACARICIDAL COMPOSITION EXHIBITING LOW TOXICITY TO MAMMALS AND FISH

Kiyoshi Kasamatsu, Takarazuka; Masachika Hirano, Ibaraki, and Takeshi Okuno, Tokyo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

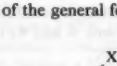
Filed Dec. 3, 1979, Ser. No. 99,482

Claims priority, application Japan, Dec. 8, 1978, 53/152289; Dec. 8, 1978, 53/152290

Int. Cl.³ A01N *47/10, 37/34*

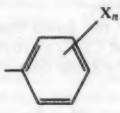
U.S. Cl. 424—300 9 Claims

1. An insecticidal or acaricidal composition comprising an inert pesticide carrier and, as an active ingredient, an insecticidally or acaricidally effective amount of a mixture comprising (I) m-(p-bromophenoxy)-α-cyanobenzyl trans- or trans-cis-2,2-dimethyl-3-(2,2-dichlorovinyl)cyclopropanecarboxylate wherein the trans/cis ratio is not less than 25/75, and a carbamate of the general formula (II),

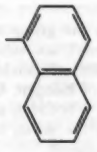


(II)

wherein R is a group of the general formula



in which X is C_1–C_4 alkyl group or C_1–C_4 alkoxy group and n is 1 or 2, or the formula



wherein the mixing ratio of the compound (I) to the compound (II) is within a range of from 1:1 to 1:100 by weight.

4,357,349

HEPATIC CANCER PREVENTING AND TREATING MEDICINE FOR LOWER ANIMALS

Makoto Enomoto, Tokyo, and Nobumichi Doke, Ibaraki, both of Japan, assignors to Nitto Chemical Industry Co. and Chemisciences Inc., both of Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,422

Claims priority, application Japan, Aug. 17, 1979, 54/104091

Int. Cl.³ A61K *31/26, 31/70*

U.S. Cl. 424—302 3 Claims

2. A method of treating hepatic cancer in lower animals comprising administering to said lower animals a therapeutically effective amount for treating said cancer of 2,3,4,5,6-penta-o-acetyl-D-gluconyl isothiocyanate.

4,357,350
NOVEL ACARICIDE COMPOSITIONS

Jean J. Herve, Aubagne, and Serge Smolikowski, Marseilles, both of France, assignors to Roussel Uclaf, Paris, France

Continuation of Ser. No. 906,752, May 17, 1978, abandoned. This application May 4, 1979, Ser. No. 35,811

Int. Cl.[3] A01N *37/34, 31/04*

U.S. Cl. 424—304 11 Claims

1. An acaricidal composition comprising an acaricidally effective amount of a synergistic mixture of 1 to 100 parts by weight of (S)α-cyano-3-phenoxy-benzyl 1R, cis 2,2-dimethyl-3-(2',2'-dibromovinyl)-cyclopropane-1-carboxylate and 100 parts by weight of 2,2,2-trichloro-1,1-di-(4-chlorophenyl)-ethanol and an inert carrier.

4,357,351
LEPIDOPTERICIDAL ISOTHIOUREA COMPOUNDS

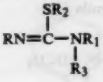
Llewellyn W. Fancher, New Castle, and Herbert B. Scher, Moraga, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 21,368, Mar. 19, 1979, abandoned. This application Sep. 9, 1980, Ser. No. 185,462

Int. Cl.[3] C07C *127/26;* A01N *47/42*

U.S. Cl. 424—326 60 Claims

1. A compound having the formula



wherein

R and R_1 are independently selected from the group consisting of C_2–C_{10} alkyl and; R and R_1 together contain from 12 to 22 carbon atoms;

R_2 is selected from the group consisting C_1–C_{14} alkyl, C_3–C_{10} alkenyl, and C_3–C_4 alkynyl; and

R_3 is selected from the group consisting of

wherein

R_4 is selected from the group consisting of hydrogen, C_1–C_{22} alkyl, phenyl, and substituted phenyl wherein the substituents are independently selected from the group consisting of halogen, C_1–C_5 alkyl, C_1–C_5 alkoxy, nitro, cyano, $—N(CH_3)_2$ and $—CF_3$, and

R_5 is selected from the group consisting of hydrogen, C_1–C_4 alkyl, and phenyl.

41. The method of controlling lepidoptera comprising applying to said lepidoptera or the locus or feedstuffs thereof a lepidopterically effective amount of the compound of claim 1.

4,357,352
ANTIVIRAL TETRACYCLONONANE DERIVATIVES, PROCESSES FOR THEIR MANUFACTURE AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Douglas L. Swallow, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

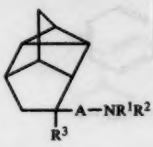
Filed Dec. 4, 1978, Ser. No. 967,794

Claims priority, application United Kingdom, Dec. 22, 1977, 53446/77

Int. Cl.[3] A01N *33/02*

U.S. Cl. 424—330 4 Claims

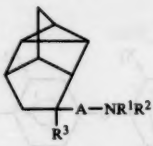
1. A tetracyclononane derivative of the formula:



II

wherein R^1 and R^2 are hydrogen, R^3 is hydrogen or methyl and A is a radical of the formula CH_2CH_2 or $CH—R^4$ in which R^4 is methyl or phenyl or a pharmaceutically-acceptable acid-addition salt thereof.

4. A pharmaceutical composition comprising a pharmaceutically effective amount of a tetracyclononane derivative of the formula:



II

wherein R^1 and R^2 are hydrogen, R^3 is hydrogen or methyl and A is a radical of the formula CH_2CH_2 or $CH—R^4$ in which R^4 is methyl or phenyl or a pharmaceutically-acceptable acid-addition salt thereof, together with a pharmaceutically-acceptable diluent or carrier.

4,357,353
PROCESS FOR THE PRODUCTION OF AN EMULSIFIER BASED ON LECITHIN AND PRODUCT THEREOF

Kuno Strauss, Hamburg, and Alice Nasner, Aumühle, both of Fed. Rep. of Germany, assignors to Lucas Meyer GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Dec. 2, 1980, Ser. No. 212,211

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948607

Int. Cl.[3] A61K *47/00*

U.S. Cl. 424—365 12 Claims

1. A process for producing an emulsifier from lecithin base by solvent extraction, comprising treating a phospholipid mixture which contains phosphatidylcholine (Pc) and phosphatidylethanolamine (Pe) dissolved in alcohol with sufficient water to cause the partial precipitation of undissolved components of the phospholipid mixture whereafter said components are separated and dried.

4,357,354
REDUCED CALORIE CHEWING GUM

Gary Kehoe, Greenwich, Conn.; Wayne J. Puglia, Bellerose Village; Frank Witzel, Saratoga Springs, both of N.Y.; Dominick R. Friello, Danbury, Conn., and Donald A. M. Mackay, Pleasantville, N.Y., assignors to Nabisco Brands, Inc., New York, N.Y.

Filed Nov. 25, 1980, Ser. No. 210,200

The portion of the term of this patent subsequent to Feb. 24, 1998, has been disclaimed.

Int. Cl.[3] A23G *3/30;* A23L *1/236*

U.S. Cl. 426—3 16 Claims

1. A reduced calorie chewing gum comprising gum base, from about 40 to about 95% by weight of a substantially calorie-free inert filler or texturizing agent dispersed in said gum base, said gum base including at least 10% air voids entrapped in the gum base matrix, which, upon chewing, become filled with moisture, and from about 1 to about 30% by weight of one or more sugars and/or sugar alcohols mixed with said gum base to provide a desirable level of sweetness while keeping the

calorie content to only about two-thirds or less of that of conventional chewing gums.

4,357,355

NON-STICK BUBBLE GUM BASE COMPOSITION

Edwin R. Koch, Garden City, and Michael Glass, Flushing, both of N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 3, 1981, Ser. No. 270,053
Int. Cl.[3] A23G 3/30
U.S. Cl. 426—4 24 Claims

1. A non-adhesive bubble gum base composition, said base composition comprising, in weight percent:

Elastomer	8–20%
Oleaginous Plasticizer	8–30%
Mineral Adjuvants	5–25%
Fatty Acids	0–20%
Elastomer Solvent	10–20%
Antioxidant/Preservative	0–2%

and

a homogeneous premixture of a non-toxic vinyl polymer having a molecular weight ranging from about 38,000 to about 94,000 and at least a portion of an emulsifier, said non-toxic vinyl polymer present in said base composition in an amount by weight thereof, of from 20% to 55%, and said emulsifier present in said base composition in an amount by weight thereof, of from 3% to 15%, and

wherein said emulsifier is present in an amount ranging from about 5% to about 75% by weight of said non-toxic vinyl polymer.

4,357,356

BREAD AND METHOD FOR MAKING SAME

Gerard Joulin, 44 rue de Poutoise, 95.870 Bezons, France

Continuation-in-part of Ser. No. 949,030, Oct. 6, 1978, abandoned. This application Apr. 16, 1980, Ser. No. 140,819
Int. Cl.[3] A21D 17/00
U.S. Cl. 426—19 9 Claims

1. Method for producing a bread product wherein dough consisting of flour, water and yeast without artificial preservatives, has been kneaded, shaped into pieces, and allowed to ferment, comprising the steps of:

introducing said dough pieces into an oven operated at an elevated temperature; partially baking said dough pieces in said oven for a length of time insufficient to fully bake the dough pieces or to form a crust, said length of time being sufficient for the dough pieces to obtain their final structure while retaining substantially their initial coloring;

introducing the resulting hot pieces directly from the oven into flexible packages of water impermeable material, said packages containing an added neutral gaseous atmosphere and hermetically sealing the packages under partial vacuum without substantial delay and before substantial lowering of the temperature and moisture content of the bread pieces, said vacuum eliminating a large part of the atmospheric oxygen present in the cells of the bread, whereby during the sterilizing process phase, the water vapor comes solely from the heart of the bread and will be reabsorbed by the bread after cooling and;

sterilizing said bread pieces at an elevated temperature while in said hermetically sealed packages.

4,357,357

THERMAL DESTABILIZATION OF MICROBIAL RENNET

Sven Branner-Jörgensen, Charlottenlund; Palle Schneider, Ballerup, and Peter Eigtved, Copenhagen, all of Denmark, assignors to Novo Industri A/S, Denmark

Filed Nov. 20, 1979, Ser. No. 96,213
Claims priority, application Denmark, Apr. 9, 1979, 1456/79
Int. Cl.[3] A23C 19/032; C12N 9/58
U.S. Cl. 426—36 14 Claims

1. A method for producing microbial rennet having reduced thermal stability for use in cheese making comprising reacting Mucor microbial rennet in an aqueous medium with an oxidizing agent containing active chlorine to produce a microbial rennet having a reduced thermal stability of at least 5° C. and having at least about 50% of the rennet activity before said reaction.

4,357,358

FEEDSTUFF OR FEEDSTUFF ADDITIVE AND PROCESS FOR ITS PRODUCTION

Rudolf Schanze, Flutgrabenweg 1a, D-8430 Neumarkt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 37,775, May 7, 1979, abandoned, which is a continuation of Ser. No. 835,593, Sep. 22, 1977, abandoned. This application Aug. 5, 1980, Ser. No. 175,382
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2643093; Aug. 18, 1977, 2737295
Int. Cl.[3] A23L 1/28
U.S. Cl. 426—62 19 Claims

1. An animal feedstuff in pressed form compressed at a pressure less than 700 atmospheres to a bulk density of about 0.3 to about 1.3 g/ml based on solid, fibrous, agricultural by-products comprising:

(a) from about 25 to about 95% by weight dry matter of at least one comminuted, solid, structured fibrous, agricultural by-product, having a low nutritional value and selected from the group consisting of cereal straw, leguminous straw, maize columellae, maize-husk-spadix grist, feedstuff cereal mixture, flax plant chaff, flax plant capsules, fibrous fruit peel, fibrous fruit skin and malt sprouts, said agricultural by-product having a length of about 10 to about 160 mm; and

(b) from about 75 to about 5% by weight dry matter of at least one digestible, non-structured, industrial by-product or residue with nutrient value, selected from the group consisting of whey, protein-enriched residues from milk treatment processes, molasses residues, vinasse, α-celluloses, starch, brewer's yeast, brewer's grains, brewing residues, distillery residues, fermentation residues, dregs, kieselguhr residues, and chitin;

(c) said feedstuff in said pressed form having a moisture content of about 8 to about 14% by weight; the structured agricultural by-product in said feedstuff in said pressed form still retaining its structured integrity, thereby to provide chewability and bits to said animal feedstuff.

4,357,359

METHOD AND APPARATUS FOR MANUFACTURE OF CANDY

David A. Cloud; Charles E. Cloud, both of Wilmette; William N. Pearson, Highland Park, and Donn A. Hartman, Gurnee, all of Ill., assignors to Cloud Corporation, Skokie, Ill.

Filed Sep. 11, 1980, Ser. No. 186,331
Int. Cl.[3] A23G 3/00, 3/06, 3/10
U.S. Cl. 426—103 27 Claims

1. A method of manufacture of milk chocolate-coated toffee candy pieces comprising heating a mass of toffee to a softened temperature sufficient to permit portions of it to be pulled from the mass, pulling portions of it from the mass in the form of fine strands while circumferentially winding the strands about a core forming area and causing the spooling to occur along the

length and about the periphery of the core forming area to form a continuous length of the core at a core forming area, contemporaneously axially moving the length of core along its axis off of an end of the core forming area, then transversely sawing an outer end of the axially moving length of core with consecutive cuts to form successive toffee pieces or toffee cores, immersing the toffee cores in a bath of milk chocolate, and cooling the chocolate-covered cores to place them in condition for packaging.

4,357,360

USE OF TRICYCLIC ALCOHOLS, ETHERS AND ESTERS FOR AUGMENTING OR ENHANCING THE AROMA OR TASTE OF FOODSTUFFS

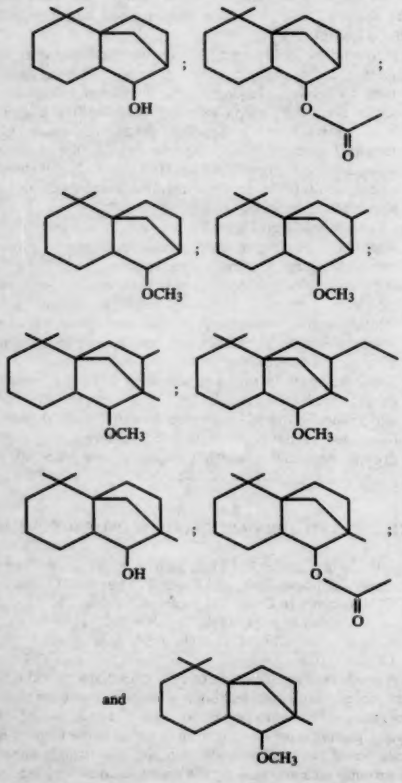
Kenneth K. Light, Ogden, Utah; Joseph A. McGhie, Montclair, N.J.; Futoshi Fujioka, Wanamassa, N.J., and Takao Yoshida, West Long Branch, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 206,649, Nov. 13, 1980. This application Oct. 13, 1981, Ser. No. 311,321

Int. Cl.³ A23L *1/226*

U.S. Cl. 426—538 6 Claims

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising adding to a foodstuff from 0.02 parts per million up to about 50 parts per million by weight based on the foodstuff of at least one tricyclic compound having a structure selected from the group consisting of:



4,357,361

COLD SOLUBLE TEA

Tito L. Lunder, and Corine M. Nielsen, both of Lausanne, Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jun. 11, 1981, Ser. No. 272,668

Int. Cl.³ A23F *3/40, 3/22*

U.S. Cl. 426—597 7 Claims

1. A process for the preparation of a powdered black tea extract which is readily and completely soluble in cold water which comprises:

(a) contacting herb tea selected from the group consisting of Hibiscus flowers, Rosehips, Peppermint and Orange blossoms with water at ambient temperature for a period of at least 5 minutes to form an infusion;

(b) separating the infusion from the herb tea;

(c) adding the herb tea infusion to black tea leaves at ambient temperature for a period of time sufficient to achieve good contact of the tea leaves with the water to form an aqueous tea extract/tea leaf mixture;

(d) heating the mixture to a temperature of at least 60° C.;

(e) separating the aqueous tea extract from the extracted black tea leaves; and then

(f) drying the aqueous extract;

wherein the amount of herb tea employed in step (a) is from 5 to 35% by weight based on the weight of black tea employed in step (c).

4,357,362

METHOD OF REDUCING FISHY ODOR OF PACKAGED FISH PRODUCT

David Barker, Barrow-on-Soar, England, assignor to Mars Limited, London, England

Continuation of Ser. No. 949,987, Oct. 10, 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,628

Claims priority, application United Kingdom, Oct. 10, 1977, 42132/77

Int. Cl.³ A23L *1/325*

U.S. Cl. 426—643 3 Claims

1. The process of preparing a packaged fish product of reduced objectionable fish odour, comprising packaging an objectionably odourous fish product in a container with a reducing sugar in quantity sufficient at high temperature to reduce objectionable fish odour, closing the container against the escape of volatiles, and cooking the closed container to reduce the objectionable fish odour of the enclosed product by the effect of the reducing sugar on the contents of the closed can under high temperature.

4,357,363

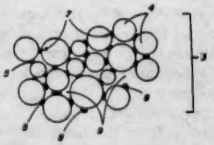
ELEMENT, STRUCTURE AND METHOD FOR THE ANALYSIS OR TRANSPORT OF LIQUIDS

Zona R. Pierce, and David S. Frank, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 193,508, Oct. 2, 1980, which is a division of Ser. No. 973,669, Dec. 27, 1978, Pat. No. 4,258,001. This application Nov. 20, 1981, Ser. No. 323,623

Int. Cl.³ G01N *31/22*

U.S. Cl. 427—2 6 Claims



1. In a method of making an element for the analysis or

transport of a liquid, said element containing a support bearing a particulate structure, said method comprising:

(a) forming in a liquid carrier a stable dispersion of

(i) a plurality of heat-stable, organo-polymeric particles non-swellable in and impermeable to said liquid under analysis, said particles having a particle size of from about 1 to 200 microns, and

(ii) an adhesive, in an amount less than 10 percent by weight of said particles, comprising an organic polymer, said adhesive polymer being different from that of said particles and being insoluble in said liquid under analysis; and

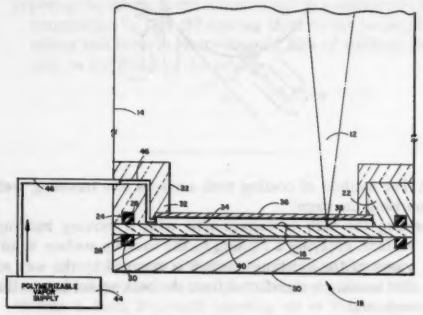
(b) applying said dispersion to said support and removing said liquid carrier at a temperature below the heat-stability temperature of said particles to concentrate said adhesive at contiguous surface areas of adjacent particles and bond said particles, in situ, on said support into a coherent, three-dimensional lattice which is non-swellable in said liquid under analysis, has interconnected void spaces among particles of said lattice to provide transport of said liquid under analysis, and has a void volume of from about 25 to 80 percent.

4,357,364

HIGH RATE RESIST POLYMERIZATION METHOD

Addison B. Jones, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 27, 1981, Ser. No. 257,822
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—43.1 **15 Claims**



1. In the method of forming polymerization resists, which includes directing high energy particles along a path across a vacuum chamber and onto polymerizable molecular species at a substrate surface with sufficient energy to polymerize the polymerizable molecular species in situ, the improvement comprising maintaining a chamber-isolated relatively higher pressure layer of polymerizable molecular species vapor locally at said substrate surface during high energy particle exposure to form the resist while maintaining said particle path free of said vapor during beam traverse of said chamber.

4,357,365

REFRACTORY METAL COATING METHOD

Lewis V. McCarty, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

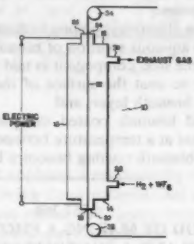
Continuation of Ser. No. 112,925, Jan. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 937,544, Aug. 28, 1978, abandoned. This application Mar. 26, 1981, Ser. No. 247,902
Int. Cl.³ B05D *3/14*
U.S. Cl. 427—52 **4 Claims**

1. An improved coating method to deposit a refractory metal continuously on a length of refractory metal wire which comprises:

(a) continuously moving a refractory metal wire at a predetermined speed upwardly through an enclosed unheated reaction chamber in a substantially vertical direction,

(b) heating said refractory metal wire during passage through said reaction chamber utilizing electrical energy supplied with mercury electrical contacts located at both bottom and top apertures in said reaction chamber,

(c) continuously introducing a volatilized refractory metal compound to the bottom of said reaction chamber which undergoes thermal diffusion separation therein so that flow in the downward direction takes place and said compound undergoes substantially quantitative conversion to



avoid side reactions at the top aperture in said reaction chamber,

(d) maintaining a temperature gradient along the vertically moving refractory metal wire so that the lower part of the said wire in the reaction chamber is cooler where deposition first takes place and produces fine grain nucleation in the initial coating, and

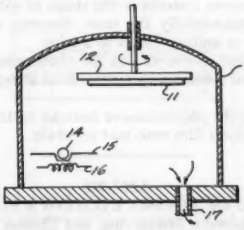
(e) continuously exhausting the reaction products formed in said reaction chamber while depositing a refractory metal coating of substantially even thickness around the refractory metal wire.

4,357,366

METHOD OF MAKING AN OPTICAL MEMORY DISK AND A PRODUCT THEREBY

Takashi Takaoka; Masahiko Mochizuki; Tadao Miura, all of Yokohama, and Mitsuo Yamashita, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 25, 1980, Ser. No. 133,924
Claims priority, application Japan, Jun. 20, 1979, 54-77946
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **9 Claims**



1. A method of making an optical memory disk comprising the steps of:

applying a thin tellurium film onto a base plate; and

forming at least two layers, each of a different oxide of tellurium on the surface of said tellurium film by oxidation treatment of at least part of the surface of said tellurium film.

4,357,367

METHOD OF BLACKENING STEEL COMPONENTS FOR CATHODE RAY TUBES

Albert Comberg, and Karl H. Panstruga, both of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,839

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010855

Int. Cl.³ C23C 3/00; C23F 5/00

U.S. Cl. 427—64 4 Claims

1. A method of providing a black coating on a cleaned and degreased steel component for use in a cathode ray tube, which method comprises:

providing an electroless plating bath consisting essentially of an acidic aqueous solution of bismuth oxynitrate;

immersing the steel component in said plating bath for a time sufficient to coat the surface of the component with an adhering bismuth layer; and

heating said bismuth coated component in an oxidizing atmosphere at a temperature between 350° C. and 650° C. until the bismuth coating becomes black.

4,357,368

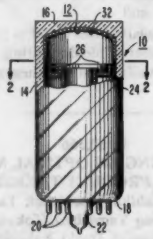
METHOD OF MAKING A PHOTOSENSITIVE ELECTRODE AND A PHOTOSENSITIVE ELECTRODE MADE THEREBY

Richard W. Longsderff, and Dale V. Henry, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,455

Int. Cl.³ H01J 9/12, 40/06

U.S. Cl. 427—74 7 Claims



1. In a method of making a photosensitive electrode including the step of vaporizing a source containing photoemissive material to form a film of photoemissive material onto a substrate in an enclosure, wherein the improvement comprises:

forming said source to include a predetermined amount of photoemissive material in the shape of spherical particles having substantially the same diameter and which are attached as uniform beads to a wire;

arranging said source so that the photoemissive material is distributed substantially symmetrical about said substrate; and

evaporating the photoemissive material to deposit a substantially uniform film onto said substrate.

4,357,369

METHOD OF PLASMA ETCHING A SUBSTRATE

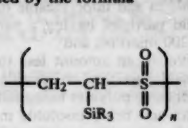
Kurt B. Kilichowski, Mercerville, and Thomas R. Pampalone, Milltown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 10, 1981, Ser. No. 320,016

Int. Cl.³ B44C 1/22; C03C 15/00, 25/06

U.S. Cl. 427—90 11 Claims

1. In a method of selectively removing portions of a layer of material from a surface of a substrate by oxygen plasma etching which comprises forming on the surface of said layer a predetermined pattern of a resist material resistant to oxygen plasma etching and etching that portions of said layer not covered by said resist material, the improvement which comprises using as said resist material a copolymer having repeating units represented by the formula



wherein R is alkyl and n is an integer.

4,357,370

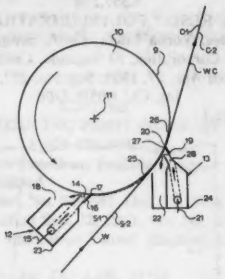
TWIN SHORT DWELL COATER ARRANGEMENT

Robert J. Alheid, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 27, 1981, Ser. No. 248,241

Int. Cl.³ B05D 3/12; B05C 1/00, 3/02

U.S. Cl. 427—211 10 Claims



9. The method of coating both surfaces of a traveling web comprising the steps:

passing the web in engagement with a moving back-up surface, applying a coating to the back-up surface in advance of the location where it is engaged by the web so that coating is transferred from the back-up surface to the web; and

applying a coating to the second surface of the web while it is supported by the back-up surface simultaneously applying a force to the web for aiding in the transfer of coating from the back-up surface to the web.

4,357,371

PROCESS FOR THE MANUFACTURE OF TUBULAR PACKAGING SHEATHS HAVING A COATING ON THE INSIDE, AND APPARATUS FOR CARRYING OUT THE PROCESS

Wolfgang Heinrich, Salach; Max Bytzek, Wiesbaden; Klaus-Dieter Hammer, Mainz, and Martin Schröder, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,946

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012250

Int. Cl.³ B05D 1/40, 7/22

U.S. Cl. 427—238 19 Claims

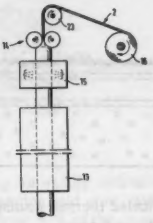
1. A process for forming an uninterrupted coating of uniform thickness on the inside of a length of tubing essentially consisting of cellulose hydrate, comprising the steps of:

forming a loop of tubing having a cavity therein with a downwardly inclined portion and an upwardly inclined portion;

filling the cavity of the tubing forming the loop with a coating liquid;

transporting the tubing along its longitudinal axis in a substantially vertically upward direction to coat the inside of the tubing, above the level of the coating liquid, with an initial layer of coating liquid;

constricting the tubing to lay partially flat along a narrow zone running transverse to the direction of transportation above the level of the coating liquid to retain the greater



part of the coating liquid in the constriction zone and form a thin layer of coating liquid of desired thickness on the inside of the tubing issuing from the constriction zone;

filling the cavity of the tubing immediately upon issuance from the constriction zone with support gas in order to at least partially inflate the tubing; and

exposing the tubing to the action of heat at a sufficiently high temperature to fuse the coating layer to the inside of the tubing and form an uninterrupted film of uniform thickness on the inside of the tubing.

4,357,372

CONTROL OF AUTODEPOSITION BATHS

Harry M. Leister, Ambler; Joseph C. Donovan, Drexel Hill, and Wilbur S. Hall, Plymouth Meeting, all of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Continuation of Ser. No. 866,053, Dec. 30, 1977, Pat. No. 4,229,492. This application Oct. 20, 1980, Ser. No. 198,598

Int. Cl.³ B05D *1/40*

U.S. Cl. 427—345 **11 Claims**

1. In an autodepositing coating process wherein a coating bath containing an acidic aqueous coating composition comprising an acid, an oxidizing agent, surfactant, coating forming resin particles dispersed therein, and pigment particles dispersed therein, is prepared from a liquid concentrate of surfactant dispersed resin and pigment and is operated continuously by immersing metal surfaces therein and withdrawing said metal surfaces after a time sufficient to build up the desired coating thickness and periodically replenishing the ingredients as they are consumed by the coating operation and wherein the composition of the replenished coating bath changes with repeated replenishment such that the coating quality deteriorates, the improvement which comprises replenishing the coating bath by withdrawing a portion of the bath and thoroughly premixing it with a liquid concentrate of surfactant dispersed resin and pigment in which the amount of surfactant present is less than the amount of surfactant that can be bound to the resin particles, returning the premixed composition to the coating bath and mixing it therewith, thereby to restore the resin/pigment solids concentration and the coating quality of the bath.

4,357,373

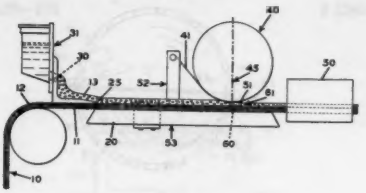
APPARATUS FOR APPLYING LATEX COATING TO MOVING FABRIC

John H. Cooper, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Apr. 15, 1981, Ser. No. 254,219

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—358 **10 Claims**



6. In a method for applying a substantially even coat of a liquid binder to a moving sheet material that travels from a liquid binder applicator station to a drying oven to provide a backing for said sheet material comprising:

(a) applying a substantially uniform amount of the liquid binder across the width of the moving sheet material on the upper surface of said material; and

(b) passing said sheet material underneath an inflexible coating thickness control means which extends across the width of the moving sheet material and which is positioned at a uniform distance above the upper surface of said moving sheet material;

the improvement comprising positioning a flexible nip blade underneath the coating thickness control means across the width of the moving sheet material so that an edge of the nip blade extends beyond the bottom dead center point of the thickness control means in the direction of the drying oven.

4,357,374

GUEST-HOST LIQUID CRYSTAL DISPLAY DEVICES WITH SILANE SURFACTANT

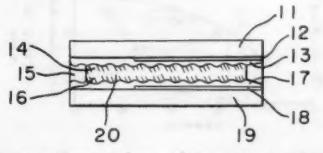
Shoichi Ogawa, Yokohama, Japan, assignor to Asahi Glass Company Ltd., Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,122

Claims priority, application Japan, Dec. 13, 1979, 54-160851

Int. Cl.³ B32B *17/10*

U.S. Cl. 428—1 **7 Claims**



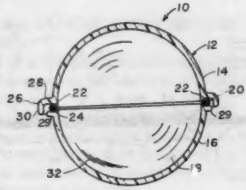
1. A guest-host liquid crystal display device having tilted homeotropic orientation using a nematic liquid crystal having negative dielectric anisotropy as a host and a dichroic dye as guest which is prepared by placing the nematic liquid crystal between two glass plates, each of the glass plates, on the surface facing the nematic liquid crystal, having an electrode thereon; said electrode having been coated with an inorganic insulating layer; said inorganic insulating layer having been treated to provide orientation by being rubbed or polished in a single direction; and coating the so-treated layer with a silane surfactant which imparts homeotropic orientation.

4,357,375

VACUUM BALL INSULATION

Hugh H. Atkinson, Jr., 41 Front St., Lonaconing, Md. 21539

Continuation of Ser. No. 908,006, May 22, 1978, abandoned. This application Sep. 30, 1980, Ser. No. 192,185
Int. Cl.³ A63B *39/08*
U.S. Cl. 428—11 1 Claim



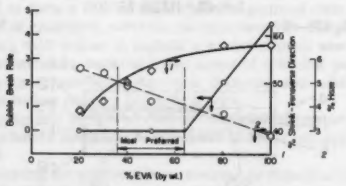
1. In insulation having plural identical separate discrete elements the improvement comprising: each element being substantially spherical and containing therein a vacuum for retarding thermal transfer by conduction therethrough, each element having a reflective aluminum coating for retarding thermal transfer by radiation therethrough, each element including first and second hemispheres, means for sealing between said first and second hemispheres at the equator, the sealing means including an "O" ring seal, each hemisphere having a respective annular flange with a peripheral recess therein at the equator for containing the "O"-ring seal, the annular flange on the first hemisphere being "L"-shaped in section and having a first leg thereof which projects radially outward from the hemisphere and a second leg integral with the first leg which overhangs and shields the "O" ring seal; the "O" ring seal resiliently holding apart said hemispheres against the force of ambient air pressure sealing said hemispheres in assembly.

4,357,376

MULTILAYER FILM FOR PRIMAL MEAT PACKAGING

Bruce E. Nattinger, Oak Park, and Stephen J. Vicik, Darien, both of Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 6, 1981, Ser. No. 278,851
Int. Cl.³ B65D *25/06*; B32B *27/08*
U.S. Cl. 428—35 15 Claims



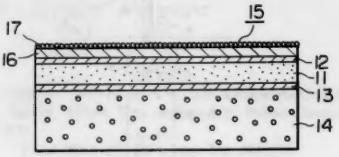
1. A flexible heat-shrinkable multilayer film suitable for packaging a primal red meat cut, said multilayer film including a first outer layer comprising a blend of ethylene-vinyl acetate copolymer, propylene-ethylene copolymer, and 1-butene-ethylene copolymer; a core layer comprising a vinylidene chloride-vinyl chloride copolymer; and a second outer layer comprising an ethylene-vinyl acetate copolymer; said first outer layer containing from between about twenty percent and about eighty percent by weight of said ethylene-vinyl acetate copolymer, from between about ten percent and about forty percent by weight of said propylene-ethylene copolymer, and from between about ten percent and about forty percent by weight of said 1-butene-ethylene copolymer, all weight percentages based on the weight of said first outer layer.

4,357,377

THERMAL INSULATING AND BITUMINOUS WATERPROOFING BOARD AND APPLICATION PROCESS THEREOF

Kaname Yamamoto, Tokyo, Japan, assignor to Tajima Roofing Co., Ltd., Tokyo, Japan

Filed May 20, 1980, Ser. No. 152,059
Claims priority, application Japan, Jun. 1, 1979, 54-67427
Int. Cl.³ B32B *11/10, 11/02*
U.S. Cl. 428—40 14 Claims



1. A prefabricated thermal insulating and bituminous waterproofing board, consisting:

a modified bitumen waterproofing layer in the form of a thick board having a thickness in the range of from about 2 to about 25 mm, said modified bitumen waterproofing layer consisting essentially of a uniform mixture of from 50 to 90 wt. % of pieces of inorganic filler and the balance is waterproofing roofing bitumen;

first and second flat fibrous sheets respectively laminated on the opposite surfaces of said modified bitumen waterproofing layer, said flat fibrous sheets being woven or non-woven fabrics consisting essentially of glass fibers and having a weight of at least about 30 g/m^2, said waterproofing roofing bitumen being permeated into and partway through said flat fibrous sheets;

a thermal insulating layer laminated on said first flat fibrous sheet, said thermal insulating layer consisting essentially of a rigid polyurethane foam which is directly foamed in situ on the surface of said first flat sheet and which penetrates thereinto so that said thermal insulating layer is strongly bonded to said first flat sheet and to said modified bitumen waterproofing layer.

4,357,378

MAGNETIC RECORDING MEDIA

Guenter Vaeth, Limburgerhof; Rudolf Bachmann, Frankenthal; Werner Senkpiel, Laudenbach; Hans-Joerg Hartmann, Freinsheim; Roland Falk, Achern, and Herbert Motz, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 853,398, Nov. 21, 1977, abandoned, which is a continuation of Ser. No. 459,453, Apr. 10, 1974, abandoned. This application Feb. 17, 1981, Ser. No. 234,708
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1973, 2318910
Int. Cl.³ B32B *3/02*
U.S. Cl. 428—64 10 Claims

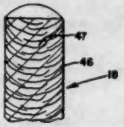
1. Magnetic recording media comprising a non-magnetic base and, applied thereto, a firmly adhering magnetic coating consisting essentially of a dispersion of finely divided magnetic pigments in a binder mixture, wherein the binder mixture consists essentially of from 40 to 80 percent by weight of an elasteromeric polyurethane which is soluble in a volatile organic solvent, and is free of isocyanate groups and from 20 to 60 percent by weight of a vinyl chloride copolymer which contains from 50 to 90 percent by weight of vinyl chloride units and from 10 to 50 percent by weight of units of at least one diester of maleic acid with an alcohol of 1 to 3 carbon atoms.

4,357,379

MELT BLOWN PRODUCT

Cephas H. Sloan; Jerry A. Wright, and Gerald P. Morie, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 17,744, Mar. 5, 1979, Pat. No. 4,267,002.
This application Mar. 19, 1981, Ser. No. 245,462
Int. Cl.³ B32B 5/12
U.S. Cl. 428—113 7 Claims



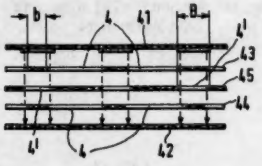
1. A fibrous mass having an axially extending core and a relatively dense skin surrounding said core, said skin accounting for from about 5% to about 50% of the cross sectional area of said mass said core comprising fibers oriented primarily transversely of said mass and having a generally parabolic shape.

4,357,380

MULTIPLE SETS, PARTICULARLY ENDLESS SETS

Lieselotte Schnug, Sachsen ueber Ansbach, Fed. Rep. of Germany, assignor to EDV-Druck Walter Schnug KG, Sachsen ueber Ansbach, Fed. Rep. of Germany

Division of Ser. No. 843,619, Oct. 19, 1977, Pat. No. 4,217,384.
This application Nov. 16, 1979, Ser. No. 95,013
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2708910; May 17, 1977, 2722240; Oct. 23, 1977, 2648124
Int. Cl.³ B32B 3/10; B41M 5/10, 5/22
U.S. Cl. 428—138 3 Claims



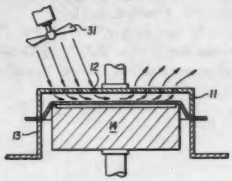
1. A multiple set of readily detachable paper sheets, comprising a plurality of paper sheets including a pair of imperforate outer sheets and a plurality of intermediate sheets disposed between said outer sheets, said intermediate sheets having communicating recesses terminated by said imperforate outer sheets, some of said communicating recesses extending through one group of intermediate sheets and other of said communicating recesses extending through another group of intermediate sheets, and adhesive means each in the form of a discrete integral mass of adhesive applied by a single adhesive applying operation to at least one of said outer sheets, said discrete integral mass of adhesive being disposed in said communicating recesses and contacting said intermediate sheets and said outer sheets to thereby detachably secure all of said sheets together to thereby form a multiple set of readily detachable sheets in which individual sheets may be readily detached while the remaining sheets in the multiple set remain adhesively secured together, said intermediate sheets having a plurality of spaced openings separated by bridging portions, said openings defining in part said communicating recesses, the length of said openings in one direction in at least one of said intermediate sheets being greater than the length of said bridging portion in said one direction in at least another of said intermediate sheets such that communication between the openings of said one and said another intermediate sheets is maintained independently of the relative position in said one direction of said one and said another intermediate sheets.

4,357,381

THERMOPLASTIC BUILDING ENCLOSURE MEMBER

Ted R. Wilson, 5009 Grand Ave., Kansas City, Mo. 64112

Filed Nov. 20, 1980, Ser. No. 208,994
Int. Cl.³ B29C 3/00, 25/00
U.S. Cl. 428—174 8 Claims



1. A process of forming a low silhouette thermoplastic enclosure panel comprising the steps of

heating a sheet-like thermoplastic workpiece to effect plastic deformation;

restraining the periphery of the workpiece in a desired plane while exerting tension on the workpiece outward toward the periphery so as to form a contact-free plane in the workpiece center;

uniformly cooling one side of said workpiece while maintaining the opposite side at or above the plastic deformation temperatures until the side being cooled becomes sufficiently rigid to maintain said workpiece shape in the desired plane;

removing said workpiece; and

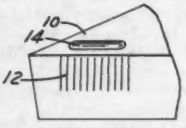
uniformly cooling both surfaces of said workpiece to effect a deflection of 0.5 to 3 percent of the shortest dimension of the panel in the direction of the first cooled surface.

4,357,382

COATED CEMENTED CARBIDE BODIES

John B. Lambert, Lake Bluff, Ill., and Mortimer Schussler, Titusville, Fla., assignors to Fansteel Inc., North Chicago, Ill.

Filed Nov. 6, 1980, Ser. No. 204,475
Int. Cl.³ B32B 15/04, 7/02
U.S. Cl. 428—212 23 Claims



1. A coated article for cutting tool and wear resistant applications which comprises a hard metal substrate and an abrasion and cratering resistant multiple layer coating on at least a portion of said substrate, said coating comprising:

(a) a first layer selected from a carbide, nitride or carbonitride of metals selected from Groups IVB and VB and a carbide of metals selected from Group VIB of the Periodic Table of Elements,

(b) a second layer in the form of a refractory oxide selected from an oxide of aluminum, zirconium, silicon, calcium, magnesium, titanium, hafnium and stabilized zirconium oxide, and

(c) a third and final layer of nitride compounds of metals

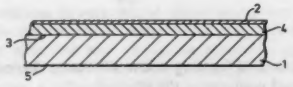
selected from Group IVB of the Periodic Table and aluminum and silicon.

4,357,383

METALLIZED FILMS

Martin E. Howden, Hertford, and Robert C. Lansbury, St. Albans, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 83,958, Oct. 11, 1979, abandoned. This application Jul. 7, 1980, Ser. No. 166,747
Claims priority, application United Kingdom, Jul. 27, 1979, 7926306
Int. Cl.[3] B32B 7/02, 27/08
U.S. Cl. 428—213 10 Claims



1. A multiple-layer metallised packaging film of total thickness between 2.5 and 150 microns said film comprising a substrate layer of a polymer or copolymer of an alpha-olefin, the molecule of which contains from 2 to 6 carbon atoms, having on at least one surface thereof an adherent layer comprising a random copolymer of ethylene with from 0.25 to 15% by weight of the copolymer of an alpha-mono-olefin containing from 3 to 6 carbon atoms in its molecule, and a metallic layer on the surface of said adherent layer remote from the substrate, said metallic layer having a thickness of from monoatomic proportions to 50 microns.

4,357,384

COMPOSITE STRUCTURES, NEW ADHESIVE, AND CEMENT COMPOSITION

F. Bon Jasperson, Ft. Lauderdale, Fla., assignor to Northwood Mills, Ltd., Toronto, Canada

Division of Ser. No. 81,862, Oct. 4, 1979, Pat. No. 4,312,908, which is a continuation-in-part of Ser. No. 961,201, Nov. 16, 1978, Pat. No. 4,256,804, which is a division of Ser. No. 854,204, Nov. 23, 1977, Pat. No. 4,146,672, which is a continuation of Ser. No. 747,801, Dec. 6, 1976, abandoned. This application Aug. 5, 1981, Ser. No. 290,254
Int. Cl.[3] B32B 7/02, 23/06, 23/08
U.S. Cl. 428—215 14 Claims

7. A composite structure comprising:
(a) an interior substrate;
(b) a layer of rigid insulation having an insulating ability at least equal to one inch of rigid urethane form;
(c) an adhesive layer bonding said insulation to said substrate;
(d) a layer at least one-sixteenth inch thick of cementitious material adhered to said insulation; and
(e) an exterior layer not less than 2–4 mils thick of the dried residue of a polymer-rich latex coating composition on the surface of said cementitious layer away from said insulation layer, said exterior layer containing at least 80% by weight of a film-forming polymer selected from the group consisting of acrylic polymers and vinyl polymers and having a Mar Elasticity Value of at least 1 and a dry and wet adhesion to maintain the adhesion of said layer to said cementitious material under normal atmospheric conditions.

4,357,385

FILAMENTARY YARN USEFUL FOR THE WEFT COMPONENT OF A TIRE CORD FABRIC AND A TIRE CORD FABRIC INCLUDING SUCH A YARN

Toshimasa Kuroda; Seiji Ishii, both of Takatsuki; Shiro Kumakawa, and Koh-ichi Iohara, both of Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jun. 13, 1980, Ser. No. 159,277
Claims priority, application Japan, Jun. 15, 1979, 54-74580
Int. Cl.[3] B60C 9/00; D03D 15/00; B32B 27/36; D01F 6/92
U.S. Cl. 428—229 11 Claims

1. A filamentary yarn useful for the weft component of a tire cord fabric, the yarn being made of a blend of [A] a polyester having ethylene terephthalate units as the main repeating unit structure and [B] a melt spinnable polymer of polyethylene 2,6-naphthalate having a glass transition temperature of at least 10° C. higher than that of the polymer [A] wherein the amount of the polymer [B] present in the yarn being in the range of 0.5% to 15% by weight whereby the yarn is characterized by possessing the properties of:
(a) a break elongation [DE] of 70% to 200%,
(b) a dry heat shrinkage [DHS] of +5% to −2%, at 150° C. for 30 minutes and
(c) a residual elongation [DEA] of more than 60% after the yarn is freely heat-relaxed at 245° C. for 2 minutes.

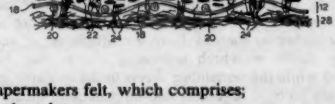
9. A tire cord fabric which comprises warp yarns forming warp cords, and weft yarns, the weft yarns being a twist of a filamentary yarn made of a blend of [A] a polyester having ethylene terephthalate units as the main repeating unit structure and [B] a melt spinnable polymer of polyethylene 2,6-naphthalate having a glass transition temperature of at least 10° C. higher than that of the polymer [B] wherein the amount of the polymer [B] present in the yarn being in the range of 0.5% to 15% by weight whereby the yarn is characterized by possessing the properties of:
(a) a break elongation [DE] of 70% to 200%,
(b) a dry heat shrinkage [DHS] of +5% to −2%, at 150° C. for 30 minutes and
(c) a residual elongation [DEA] of more than 60% after the yarn is freely heat-relaxed at 245° C. for 2 minutes.

4,357,386

PAPERMAKERS FELT AND METHOD OF MANUFACTURE

William A. Luciano, Clifton Park, and Steven S. W. Yook, Albany, both of N.Y., assignors to Albany International Corp., Albany, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,914
Int. Cl.[3] D03D 23/00; B32B 5/02, 5/06
U.S. Cl. 428—234 5 Claims



1. A papermakers felt, which comprises;
a textile base layer;
an intermediate layer of granular particles of a synthetic, flexible polymeric resin foam; and
an upper layer for receiving a wet paper sheet affixed to the base layer and the intermediate layer by needling, said upper layer comprising a plurality of non-woven textile staple fibers.

4,357,387

FLAME RESISTANT INSULATING FABRIC COMPOSITIONS PREPARED BY PLASMA SPRAYING

Stephen George, and Thomas H. George, both of Clinton, N.J., assignors to Subtex, Inc., Hartsdale, N.Y.

Continuation-in-part of Ser. No. 294,771, Aug. 20, 1981. This application Jan. 12, 1982, Ser. No. 338,853

Int. Cl.[3] B32B *7/00*; D04B *1/00*; B05D *1/00*

U.S. Cl. 428—246 17 Claims

1. A method of preparing a flexible refractory coated fabric composition which comprises:

(a) developing a thermal plasma spray,

(b) introducing finely divided refractory materials into said thermal plasma spray, and

(c) directing said thermal plasma spray at the exposed surface of a non-rigid base fabric whereby a coating of said refractory materials is formed on said fabric, said refractory materials being capable of fusing with said fabric at elevated temperatures.

5. A method according to claim 1 including the following additional step:

(d) forming an abrasion resistant polymeric coating on the outer surface of said coating of said refractory materials.

17. A refractory coated fabric composition prepared according to the method of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 or 16.

4,357,388

HOT ROLL FUSER

James C. Minor, Boulder County, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 257,841, Apr. 27, 1981, abandoned, which is a continuation-in-part of Ser. No. 206,586, Nov. 13, 1980, abandoned. This application Dec. 2, 1981, Ser. No. 326,875

Int. Cl.[3] B32B *15/08*; B21B *31/08*

U.S. Cl. 428—331 5 Claims

1. A fixing roll comprising a rigid core and an outer resilient elastomeric sleeve which is a mixture of about 70 parts by weight part A and about 30 parts by weight part B;

wherein part A is a polymethylvinylsiloxane polymer where the vinyl groups are terminating groups, and of a molecular weight average of about 17,700 and a polydispersity of about 2.85, and includes about 47.7% by weight of a finely divided mineral silica, and a small amount of an organic complex of platinum; and

part B is a two-part polymer of said polymethylvinylsiloxane of a molecular weight average of about 14,200 and a polydispersity of about 4.21, and polymethyl-H-siloxane in which the hydride function is greater than two, and of a molecular weight average of about 3,480 and a polydispersity of about 1.56, and includes about 45% by weight of said finely divided mineral silica,

the after-curing crosslink density of said sleeve being from 15 to 23×10^{-5} mole crosslinks per gram.

4,357,389

POLYMER DOPE COMPOSITION, COMPOSITE FIBERS MADE THEREFROM AND PROCESS FOR MAKING SAME

Eiji Satoh; Tetsuo Matsushita; Atsushi Ishida; Tamio Ishitobi, and Shigemitsu Muraoka, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

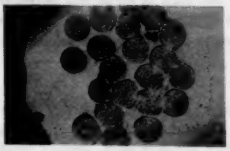
Filed Sep. 9, 1980, Ser. No. 185,435

Claims priority, application Japan, Sep. 10, 1979, 54-115131

Int. Cl.[3] D02G *3/00*

U.S. Cl. 428—373 10 Claims

1. A composite fiber which comprises a cellulose derivative and an acrylonitrile polymer, wherein the cellulose derivative is present in the form of a dispersed phase of fine fibers in a matrix of the acrylonitrile polymer, the crystalline orientation angle of the acrylonitrile polymer phase is in the range of from 18° to 63° as measured by the wide angle X-ray diffractiometry, the ratio of the crystalline orientation angle of the cellulose derivative phase to the crystalline orientation angle of the acrylonitrile polymer phase satisfies the requirement of the formula (1):



$$\alpha_{Cell\ Der.}/\alpha_{PAN} \leqq 1 \quad (1)$$

wherein $\alpha_{Cell\ Der.}$ stands for the crystalline orientation angle (°) of the cellulose derivative phase and α_{PAN} stands for the crystalline orientation angle (°) of the acrylonitrile polymer phase.

4,357,390

ANTISTATIC POLYESTER FIBERS

Kiyotaka Ozaki, Takatsuki, and Michikage Matsui, Ibaraki, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 18, 1981, Ser. No. 245,183

Claims priority, application Japan, Mar. 25, 1980, 55/36921; Nov. 4, 1980, 55/153823; Nov. 4, 1980, 55/153824

Int. Cl.[3] D02G *3/00*

U.S. Cl. 428—398 12 Claims

1. An antistatic polyester fiber composed of a single polymeric component, having at least one hollow core extending along the longitudinal axis thereof, the hollow ratio being at most 15%, and containing (a) a polyoxyalkylene glycol substantially non-reactive with said polyester and (b) an ionic antistatic agent, dispersed through the fiber in an amount of at most 3% by weight based on the weight of the fiber, characterized by the presence of a highly conductive portion formed by the dispersion of said polyoxyalkylene glycol around said hollow core in a high density and further characterized in that the ionic antistatic agent is almost uniformly dispersed throughout the cross-section of the fiber.

4,357,391

MAGNETIC RECORDING MEDIUM

Akihiko Hosaka, and Kiyotaka Okuyama, both of Saku, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,472

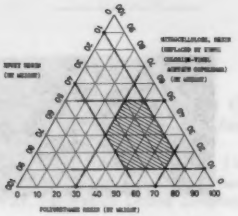
Claims priority, application Japan, May 18, 1979, 54/60386

Int. Cl.[3] G11B *5/70*

U.S. Cl. 428—413 7 Claims

1. A magnetic recording medium comprising a magnetic coating material coated on a base material, said coating material comprising powdered magnetic material dispersed in a ternary binder composition containing from 30 to 70% by

weight of a polyurethane resin, from 10 to 40% by weight of an epoxy resin and from 10 to 50% by weight of replaced nitrocel-



lulose, containing vinyl chloride-vinyl acetate copolymer, together with a polyisocyanate curing agent.

4,357,392

COVERSHEET FOR COLOR TRANSFER ASSEMBLAGES

Kenneth J. Reed; Patrick H. Saturno, both of Rochester, and Gerald L. Ducharme, Naples, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 175,224, Aug. 4, 1980, Pat. No. 4,314,020. This application Oct. 2, 1981, Ser. No. 308,060

Int. Cl.³ B32B *27/30;* **G03C** *7/00*

U.S. Cl. 428—522 **4 Claims**

1. A cover sheet adapted to be permeated by an alkaline processing composition, comprising a transparent support having thereon, in sequence, a neutralizing layer for neutralizing said alkaline processing composition, a second timing layer and a first timing layer, said first timing layer being capable of being permeated by said alkaline processing composition in a relatively short time and containing photographic addenda for substantially terminating development of a silver halide emulsion layer, and said second timing layer being capable of being permeated by said alkaline processing composition only after said silver halide development has been substantially terminated.

2. The cover sheet of claim 1 wherein said second timing layer comprises a mixture of (1) from about 5 to about 95 percent by weight of a terpolymer comprising from about 55 to about 85 percent by weight of vinylidene chloride, from about 5 to about 35 percent by weight of an ethylenically unsaturated monomer, and from about 0 to about 20 percent by weight of an ethylenically unsaturated carboxylic acid, and (2) from about 5 to about 95 percent by weight of polymeric carboxy-ester-lactone.

4,357,393

SINTERED POROUS METAL PLATE AND ITS PRODUCTION

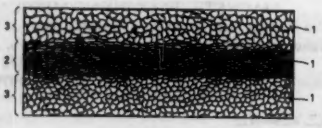
Masatoshi Tsuda, Kyoto; Takeshi Kobayashi, Suita, and Katsumi Kaitani, Yao, all of Japan, assignors to Katuragi Sangyo Co., Ltd., Osaka, Japan

Filed Apr. 8, 1980, Ser. No. 138,332

Claims priority, application Japan, Apr. 10, 1979, 54-43219

Int. Cl.³ B22F *7/04, 7/08;* **B32B** *5/18*

U.S. Cl. 428—547 **4 Claims**



1. A sound absorbing or vibration absorbing sintered porous metal plate which comprises metal particles directly and integrally bonded together due to sintering and pressing without the use of a binder material, said plate being of porous structure and having a continuous density gradient in the direction of thickness and a multi-layer structure comprising two coarse layers with a dense layer therebetween.

4,357,394

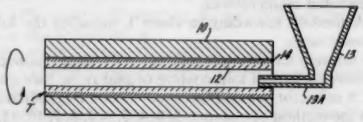
CENTRIFUGAL CASTING

Igor Y. Khandros, Hoboken, N.J., assignor to Abex Corporation, New York, N.Y.

Division of Ser. No. 168,728, Jul. 14, 1980, abandoned. This application Aug. 7, 1981, Ser. No. 291,027

Int. Cl.³ B22D *19/16;* **B32B** *15/18, 15/20*

U.S. Cl. 428—595 **6 Claims**



1. A centrifugal casting having at and near the outside surface a first zone having a high concentration of a dense metal alloyed with a low concentration of a less dense metal; a second zone having a higher concentration of the less dense metal, higher than in the first zone, alloyed with a lower concentration of the dense metal, lower than in the first zone, at and near the inside surface; and a transition zone between the other two zones where the concentration of the less dense metal is continuously increasing radially in the direction of the inside surface.

4,357,395

TRANSFER LAMINATION OF VAPOR DEPOSITED FOILS, METHOD AND PRODUCT

Eric Lifshin, Loudonville; Joseph D. Cargioli; Stephen J. Schroder, both of Schenectady, and Joe Wong, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 22, 1980, Ser. No. 180,341

Int. Cl.³ B21C *37/00;* **C25D** *7/04;* **B21D** *39/00;* **B32B** *3/24*

U.S. Cl. 428—607 **8 Claims**

1. A metal-clad laminate product for use in printed circuit board production, said product consisting essentially of:

a substrate, and

a metal foil adhering to said substrate, said foil consisting essentially of a vapor deposited metal coating integral with an electrolytically deposited metal bonding layer, said vapor deposited metal coating having an average grain size on the order of 500 Angstroms to provide a continuous, smooth, virtually pinhole-free outer surface for said laminate product and said bonding layer being formed with projecting metallic portions, said projecting metallic portions being embedded in said substrate with material of said substrate being in direct contact with the metal surfaces of said projecting metallic portions.

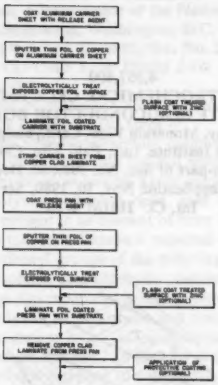
6. A copper-clad laminate product consisting essentially of:

a carrier sheet,

a coating of a release agent covering one major surface of said carrier sheet and

a copper foil weakly bonded to said release agent, said foil consisting essentially of a vapor deposited copper coating integral with an electrolytically deposited copper-containing metallic bonding layer, said vapor deposited copper coating having an average grain size on the order of 500 Angstroms to provide a continuous, smooth, virtually

pinhole-free surface in contact with said release agent and said bonding layer having projecting metallic portions



formed on the major surface thereof away from said vapor deposited copper coating.

4,357,396

SILVER AND COPPER COATED ARTICLES PROTECTED BY TREATMENT WITH MERCAPTO AND/OR AMINO SUBSTITUTED THIADIAZOLES OR MERCAPTO SUBSTITUTED TRIAZOLES

John F. Grunewalder, Glenshaw; William A. Essary, Freeport, both of Pa., and John S. Ostrowski, Richardson, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 26, 1981, Ser. No. 228,444
Int. Cl.³ B32B *15/08*; G02B *5/08*; E06B *3/24*
U.S. Cl. 428—626 **21 Claims**

9. A mirror comprising a silvered glass surface having thereon a plural coating comprising a thin copper layer having a thickness of up to about 10 microinches and a superimposed layer of an organic film-forming composition compatible with said copper layer, at least one of said layers having been contacted with a compound selected from the group consisting of a thiadiazole substituted on the ring by at least one mercapto group and/or at least one amino group, and a triazole substituted on the ring by at least one mercapto group and optionally by at least one amino group.

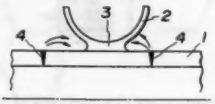
17. A multiple glazed unit comprising a plurality of glass sheets hermetically sealed at their edges to form an enclosed air space at least one of said glass sheets having its inner surface coated with an adherent light transmissive coating comprising a silver layer and a superimposed copper layer, said coating having been contacted with a compound selected from the group consisting of a thiadiazole substituted on the ring by at least one mercapto group and/or by at least one amino group, and a triazole substituted on the ring by at least one mercapto group and optionally by at least one amino group.

4,357,397

BRAZING FIN STOCK FOR USE IN ALUMINUM BASE ALLOY HEAT EXCHANGER

Yoshio Baba; Zenichi Tanabe, both Nagota; Toshiyasu Fukui, and Hiroshi Ikeda, both of Tayooke, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Jul. 28, 1980, Ser. No. 172,729
Claims priority, application Japan, Mar. 31, 1980, 55-40197
Int. Cl.³ B32B *15/01, 15/20*
U.S. Cl. 428—654 **6 Claims**



1. A brazing fin stock comprising a core clad with a cladding layer,

said core having a grain size of 100 μm or more and being made of an aluminum base alloy consisting essentially of from 0.5 to 2 wt.% of manganese plus iron, wherein the amount of said manganese is greater than the amount of said iron and the amount of said iron being an amount effective to increase the strength of said core and to provide a grain size of said core of 100 μm or more, from 0.1 to 0.7 wt.% of zinc, from 0.001 to less than 0.02 wt.% of tin and the balance is aluminum,

said cladding layer being made of an alloy consisting essentially of from 5 to 15 wt.% of silicon and the balance is aluminum.

2. A brazing fin stock comprising a core clad with a cladding layer,

said core having a grain size of 100 μm or more and being made of an aluminum base alloy consisting essentially of from 0.5 to 2 wt.% of manganese plus iron, wherein the amount of said manganese is greater than the amount of said iron and the amount of said iron being an amount effective to increase the strength of said core and to provide a grain size of said core of 100 μm or more, from 0.1 to 0.7 wt.% of zinc, from 0.001 to less than 0.02 wt.% of tin and the balance is aluminum,

said cladding layer being made of an alloy consisting essentially of from 5 to 15 wt.% of silicon, from 0.1 to 2 wt.% of magnesium and the balance is aluminum.

3. A brazing fin stock comprising a core clad with a cladding layer,

said core having a grain size of 100 μm or more and being made of an aluminum base alloy consisting essentially of from 0.5 to 2 wt.% of manganese plus iron, wherein the amount of said manganese is greater than the amount of said iron and the amount of said iron being an amount effective to increase the strength of said core and to provide a grain size of said core of 100 μm or more, from 0.1 to 0.7 wt.% of zinc, from 0.001 to less than 0.02 wt.% of tin and the balance is aluminum,

said cladding layer being made of an alloy consisting essentially of from 5 to 15 wt.% of silicon, from 0.001 to 0.2 wt.% of bismuth, from 0.001–0.1 wt.% of beryllium and the balance is aluminum.

4,357,398
ELECTROCHEMICAL CELL HAVING CYLINDRICAL ELECTRODE ELEMENTS

Paul A. Nelson, Wheaton, and Hiroshi Shimotake, Hinsdale, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 5, 1981, Ser. No. 240,673
Int. Cl.³ H01M 2/26, 6/44
U.S. Cl. 429—94 **12 Claims**

1. A high temperature electrochemical cell including a transition metal chalcogenide and a solid lithium alloy as electrochemically active materials within a cylindrical, electrically conductive cell container comprising:

an electrode of first polarity including a plurality of first electrically conductive tubes with perforate walls affixed lengthwise each along one of a plurality of separate substantially parallel axes within said cell container and a first of said electrochemically active materials of first polarity along with an electrolytic metal halide salt substantially filling said cell container outside said first electrically conductive tubes;

a plurality of electrodes of opposite polarity to said first polarity disposed one each lengthwise within but spaced from the walls of said first tubes, each electrode of opposite polarity including said electrochemically active material of opposite polarity to said first material and electrically conductive means for collecting current from said electrodes of opposite polarity;

a plurality of electrically insulative tubular layers disposed one each within said first electrically conductive tubes between the walls thereof and each of said electrodes of opposite polarity; and

electrical terminal means for electrically communicating with said electrode of first polarity and with said plurality of electrodes of opposite polarity whereby electrical energy can be accumulated into and withdrawn from said electrochemical cell.

4,357,399
ALKALI METAL-SULFUR CELLS

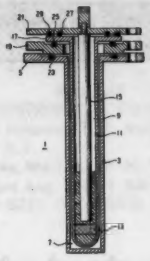
James J. Auborn, Warren, and Shelle M. Granstaff, Jr., Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 100,388, Dec. 5, 1979, abandoned. This application Oct. 23, 1981, Ser. No. 314,385
Int. Cl.³ H01M 4/36
U.S. Cl. 429—104 **8 Claims**

1. A cell comprising an alkali metal anode;

a cathode, a solid ionic electrolyte, said electrolyte separating said anode and said cathode;

characterized in that the active reactants of said cathode comprise halosulfanes and haloacids;

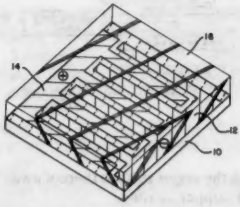


said halosulfanes and said haloacids having molar ratios between 2:1 and 1:2, said active reactants forming a basic mixture for at least part of the charge/discharge cycle.

4,357,400
PHOTOELECTROCHEMICAL CELL EMPLOYING DISCRETE SEMICONDUCTOR BODIES

Anthony J. Appleby, Mountain View, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 102,560, Dec. 11, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,617
Int. Cl.³ H01M 6/36
U.S. Cl. 429—111 **11 Claims**



1. A photovoltaic cell comprising

an insulative substrate,

a first conductive layer and a second conductive layer on a major surface of said substrate, said first and second conductive layers being interleaved,

a first semiconductor material comprising a plurality of discrete bodies of one conductivity type positioned on said first conductive layer,

a second semiconductor material comprising a plurality of discrete bodies of opposite conductivity type positioned on said second conductive layer,

an electrically insulative layer overlying said major surface and said first and second conductive layers with said first and second semiconductor materials selectively exposed through said insulative material,

an electrolytic solution overlaying said major surface and in contact with said first and second semiconductor materials, and

means enclosing said electrolytic solution through which light can pass and impinge on said first and second semiconductor material.

4,357,401
MACROMOLECULAR MATERIAL OF IONIC CONDUCTION

Jean D. Andre; Andreas Killis; Jean-Francois Le Nest, all of Grenoble, and Herve M. Cheradame, La Tronche, all of France, assignors to L'Etat Francais represente par le Delegue General pour l'Armement, Paris, France

Filed Apr. 1, 1981, Ser. No. 249,940
Claims priority, application France, Mar. 31, 1980, 80 07135
Int. Cl.³ H01M *6/18*
U.S. Cl. 429—192 **9 Claims**

1. A solid electrolyte constituted by a macromolecular material of ionic conduction, characterized by the fact that it is formed of cross-linked polymers or oligomers containing heteroatoms in the monomer unit or in side chains as well as cross-linkable functions and containing one or more ionizable salts and having a glass transition temperature as low as possible.

4,357,402
POLYVINYL ALCOHOL CROSS-LINKED WITH TWO ALDEHYDES

Dean W. Sheibley, Sandusky; Lorra L. Rieker, Cleveland; Li-Chen Hsu, Westlake, and Michelle A. Manzo, Cleveland, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 10, 1981, Ser. No. 272,234
Int. Cl.³ C08F *8/28;* H01M *2/00, 2/16, 2/18*
U.S. Cl. 429—206 **14 Claims**

1. A method of producing a cross-linked polyvinyl alcohol element which comprises the steps of:

providing an aqueous admixture comprising

a film-forming polyvinyl alcohol resin,

a dialdehyde cross-linking agent capable of cross-linking the polyvinyl alcohol resin, said cross-linking agent being present in an amount of from 1 to 20% by weight of the theoretical amount required to react with all of the hydroxyl groups of the polyvinyl alcohol resin, and

a water soluble acid-aldehyde containing a reactive aldehyde group capable of reacting with hydroxyl groups in the polyvinl alcohol resin and containing an ionizable acid hydrogen atom, said acid-aldehyde being present in an amount of from 1 to 50% by weight of the theoretical amount required to react with all of the hydroxyl groups of the polyvinyl alcohol resin and sufficient to reduce the pH of the aqueous admixture to not more than 5;

forming the admixture into a desired physical shape; and

heating the shaped admixture to form a self-supporting polymeric article and to simultaneously effect a cross-linking reaction between the dialdehyde cross-linking agent and the polyvinyl alcohol resin to produce a cross-linked polyvinyl alcohol element.

13. In an alkaline battery having a cross-linked polyvinyl alcohol separator, the improvement wherein the separator is made by the process of claim 1.

4,357,403
PHOTOCONDUCTIVE PLATE FOR PRINTING AND A METHOD FOR THE PREPARATION OF A PRINTING PLATE BY HEATING

Fumio Shimada, Fussa, and Kinu Hiruma, Tachikawa, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Aug. 7, 1980, Ser. No. 176,184
Claims priority, application Japan, Aug. 8, 1979, 54-100165
Int. Cl.³ G03G *13/32*
U.S. Cl. 430—18 **8 Claims**

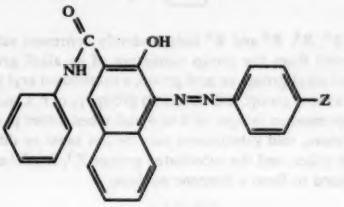
1. A photoconductive plate for printing use having imaged and non-imaged portion, said photoconductive plate comprising an electroconductive support and a photoconductive layer, which photoconductive layer includes a photoconductive material and a binder,

A. said photoconductive material comprising an organic photoconductive pigment selected from the group consisting of:

$$(C_3H_4N_2)Rn \qquad (I)$$

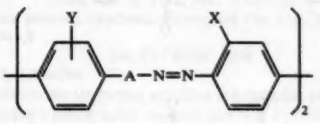
wherein, R is hydrogen, deuterium, sodium, potassium, copper, silver, beryllium, magnesium, calcium, zinc, cadmium, barium, mercury, aluminum, gallium, indium, lanthanum, neodymium, samarium, europium, dysprosium, holmium, erbium, thulium, ytterbium, vanadium, antimony, chromium, molybdenum, uranium, manganese, iron, cobalt, nickel, rhodium, palladium, osmium or platinum; and n is an integer of 0 to 2;

II.

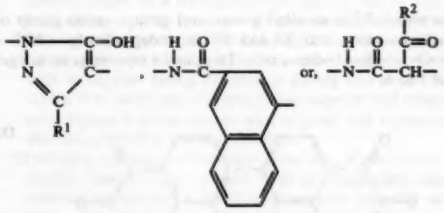


wherein Z is $-NO_2$, $-CN$, $-Cl$, $-Br$, $-H$, $-CH_3$, $-OC_2H_5$, $-OH$, or $-N(C_2H_5)_2$;

III.

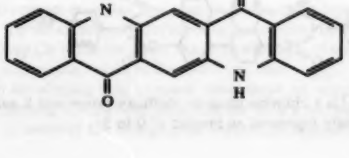


wherein A is

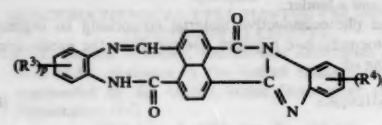


wherein R^1 and R^2 independently represent a lower alkyl group, and X and Y are independently $-NO_2$, $-CN$, $-H$, $-CH_3$, $-OCH_3$, $-OC_2H_5$, $-OH$, $-Cl$, $-Br$, or $-N(C_2H_5)_2$;

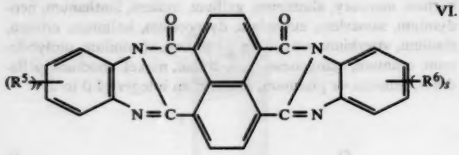
IV.



V.

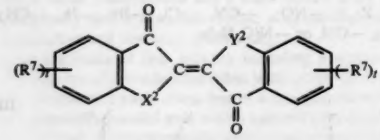


VI.

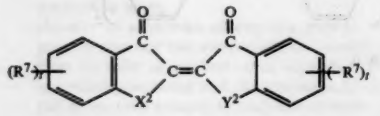


wherein R^3, R^4, R^5 and R^6 independently represent substituents selected from the group consisting of an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, halogen, a nitro group, and an amino group, p, q, r, s, independently represent an integer of 0 to 4 and when either p, q, r or s is 2 or more, said substituents may be the same or different from each other, and the substituted groups R^3, R^4, R^5 and R^6 may be fused to form a benzene nucleus;

VII.



VIII.

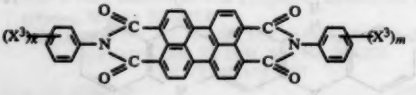


in which R^7 is an alkyl group, aryl group, amino group or halogen atom, and X^2 and Y^2 are independently —NH—, —O—, —S—, —Se—, or —Te—; and t represents an integer of 1 to 4;

IX.

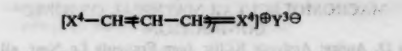
wherein Q is an alkyl group, aryl group, alkyaryl group, alkoxy group, heterocyclic substituted group or halogen atom;

X.



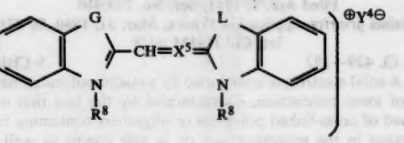
wherein X^3 is a chlorine atom or methoxy group and k and m independently represent an integer of 0 to 5;

XI.

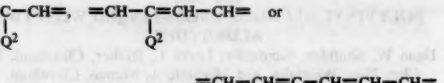


wherein Y^3 is an iodine or bromine atom, X^4 represents a quinoline ring, and l represents an integer of 0, 1, 2 or 3;

XII.

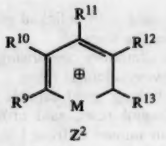


wherein R^8 is methyl, ethyl, or allyl; Y^4 is chlorine, bromine, or iodine; G and L are independently oxygen, sulfur or selenium; X^5 is:



wherein Q^2 is hydrogen, methyl, or ethyl; and

XIII.



wherein R^9, R^{10}, R^{11}, R^{12} and R^{13} are independently hydrogen, aliphatic or aromatic groups having one to fifteen carbon atoms, alkoxy groups, or vinyl and wherein M is sulfur, oxygen or selenium, and a pair of R^9 and R^{10}, and a pair of R^{12} and R^{13} may be a group of atoms necessary to complete a aryl ring to form a pyrylium nucleus; and Z^2 represents anion functional groups; and

B. said binder comprising an alkaline soluble phenol resin obtained by condensation of an aldehyde and at least one of phenol, O-cresol, m-cresol, and p-cresol; said photoconductive plate having been subjected, to inhibit formation of fog in non-imaged portions of said plate, to heat treatment at a sufficiently elevated temperature prior to removal of portions of said photoconductive layer so that at least 80% by volume of the non-imaged portions of the photoconductive layer is removed when said photoconductive plate is subjected to treatment with a removing solution.

4,357,404

PROCESS FOR FORMING A LITHOGRAPHIC PRINTING PLATE BY ELECTROPHOTOGRAPHY

Sadao Osawa; Seiichi Taguchi, and Satoru Honjo, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 4, 1980, Ser. No. 156,307

Claims priority, application Japan, Jun. 4, 1979, 54-69662

Int. Cl.³ G03G *13/28, 13/20*

U.S. Cl. 430—49 **18 Claims**

1. A process for preparing a lithographic printing plate from an electrophotographic photosensitive material comprising a photoconductive insulating layer containing photoconductive zinc oxide and a thermoplastic insulating resin wherein the ratio of ZnO: binder resin is from about 3:1 to 20:1 disposed on

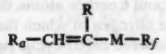
a waterproof support, said process comprising the steps of electrical charging, imagewise exposure, and development of the material in a wet developer having toner particles containing an oleophilic component dispersed in an insulating liquid carrier, thereby providing an oleophilic toner image directly on said photoconductive insulating layer and heating the developed photosensitive material at 120° C. or more such that when an adhesive tape having a tackiness of 280 to 350 g/10 mm wide portion as measured by the 180° peeling method of JIS C2107 (passed once between pressure rollers at 50 mm/sec) and which has been contact-bonded to the surface of said toner image-bearing photosensitive material by passage between a metal roll and a rubber roll pressed against said roll at a pressure of 6000 g/cm^2, is peeled off said photosensitive material one minute after the contact-bonding at a peeling rate of 500 mm/min and an angle of 180 degrees, the toner image carried away by adhering to the tape is not more than 30 wt.% of the toner in the solid image area on which at least 0.03 mg/cm^2 of the toner is deposited, and the cohesion of toner particles inside the toner layer against the peeling force is at least about 350 g/10 mm wide portion.

4,357,405
FLUORINATED DYE SENSITIZED ORGANIC ELECTRON DONOR COMPOUND

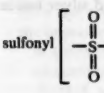
Louis M. Leichter, Woodbury; John J. Stofko, Jr., St. Paul, and Terry J. Sonnonstine, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

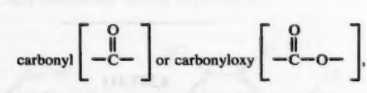
Filed Feb. 23, 1981, Ser. No. 237,067
Int. Cl.^{3} G03G 5/04
U.S. Cl. 430—58 **15 Claims**

1. A spectrally sensitized organic charge transport material comprising an electronically active organic donor compound sensitized with a dye of the formula



Wherein R_a represents a monovalent chromophoric radical, M represents





R_f represents a highly fluorinated aliphatic radical and R represents a monovalent electron-withdrawing radical.

4,357,406
DEVELOPER FOR ELECTROPHOTOGRAPHY AND PROCESS FOR PREPARATION THEREOF

Toshihiro Kouchi, Hirakata, and Tatsuo Aizawa, Osaka, both of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Division of Ser. No. 17,804, Mar. 5, 1979. This application Dec. 31, 1980, Ser. No. 221,405
Claims priority, application Japan, Mar. 10, 1978, 53-26518
Int. Cl.^{3} G03G 9/16
U.S. Cl. 430—137 **12 Claims**

1. A process for the preparation of developers for electrophotography, which comprises (a) preparing an emulsion of a soft parting or fixing material insoluble in cold toluene but soluble in hot toluene and having a penetration of 1 to 50 as measured at 25° C. by dissolving said soft parting or fixing material in toluene at a temperature higher than 65° C. and cooling the resulting solution to precipitate said soft parting or fixing material in the form of emulsion particles having a substantially spherical shape and a particle size not larger than 10μ, (b) mixing said emulsion with a hard resin soluble in cold toluene and at least one pigment selected from the group consisting of coloring pigments, extender pigments, magnetic pigments and electrically conductive pigments to form a composition for spraying which comprises the emulsion particles and pigment dispersed in the hard resin solution, said parting or fixing material and said hard resin being present at a weight ratio of 95:5 to 55:45, and then (c) spraying said composition into a drying atmosphere to form developer particles having a dispersion structure of a continuous phase of a homogeneous mixture of the hard resin and at least one pigment and a plurality of dispersed phases of the substantially spherical particles of the soft parting or fixing material.

4,357,407
PRODUCTION OF REVERSE READING POSITIVE IMAGES OF A STRAIGHT READING ORIGINAL

Leon L. Vermeulen, Herenthout; Albert L. Poot, Kontich, and Jozef W. Van den Houte, Edegem, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Apr. 6, 1981, Ser. No. 251,079
Claims priority, application European Pat. Off., Oct. 9, 1980, 80200949.8
Int. Cl.^{3} G03C 5/54
U.S. Cl. 430—204 **7 Claims**

1. Process for preparing an offset lithographic printing plate comprising a lithographic support carrying a positive working photosensitive resist layer which comprises the steps of:

(1) photo-exposing to an original, in a camera without a reversing optical means, a negative working photographic material comprising a negative working silver halide emulsion layer on a transparent film support and an antihalation layer either between the emulsion layer and the film support or at the side of said support opposite to that carrying the emulsion layer, said material being disposed with its support facing the camera during said exposure which thus takes place through said support and when said original is a continuous tone original said exposure also being effected through a screen,

(2) bringing the exposed emulsion layer side of said photographic material into contact with an image-receiving material comprising a transparent support carrying an image-receiving layer containing developing nuclei in the presence of at least one developing agent, an aqueous alkaline liquid for development of the exposed silver halide, and of a silver halide complexing agent to effect the transfer by the diffusion of complexes of unexposed silver halide from the photographic material into the image-receiving layer to form a visible silver image therein,

(3) separating the exposed photographic material from said image-receiving material,

(4) contact-exposing said photosensitive resist layer through the silver image carrying image-receiving material from step (3) while the silver image bearing side of said material is in contact with said resist layer, and

(5) developing said exposed resist layer by selectively removing the exposed areas thereof with a solvent therefor to uncover the lithographic support in these areas.

4,357,408

ACIDIC ADHESIVE COMPOSITIONS AND SELF-PROCESSING PHOTOGRAPHIC PRODUCTS CONTAINING SAME

Robert R. Rose, Spencerport, and Carl H. Eldredge, Rushville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,746
Int. Cl.³ G03C 1/76, 1/48
U.S. Cl. 430—207 14 Claims

1. An image-recording element comprising:

(1) a support,

(2) a plurality of layers including an image-recording layer having an image area adapted to be processed by an alkaline processing composition, and

(3) a mask providing an aperture adapted to receive said alkaline processing composition and a border which defines said image area,

said mask being permanently bonded to said image-recording layer by a high strength adhesive composition which is disposed within said border and is subject to contact with said alkaline processing composition,

said adhesive composition comprising: a polymeric acidic component adapted to neutralize said alkaline processing composition in said border and having at least 3 milliequivalents of acid per gram of said component, and a substantially immobile, blocked photographic development restrainer or a substantially immobile, blocked competing photographic developer.

4,357,409

SULFO-CONTAINING ADHESIVE COMPOSITIONS AND SELF-PROCESSING PHOTOGRAPHIC PRODUCTS CONTAINING SAME

Wayne A. Bowman, Walworth, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,747
Int. Cl.³ G03C 1/76, 1/48
U.S. Cl. 430—207 23 Claims

1. In an image-recording element comprising:

(1) a support

(2) a plurality of layers including an image-recording layer having an image area adapted to be processed by an alkaline processing composition,

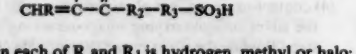
(3) a mask providing an aperture adapted to receive said alkaline processing composition and a border which defines said image area,

said mask being permanently bonded to said image-recording layer by a high strength adhesive composition which is disposed within said border and is subject to contact with said alkaline processing composition,

said adhesive composition comprising a polymeric acidic component adapted to neutralize said alkaline processing composition in said border and having at least 3 milliequivalents of acid per gram of component, and a substantially immobile, blocked photographic development restrainer or a substantially immobile, blocked competing photographic developer,

the improvement wherein said polymeric acidic component comprises an acidic polymer having:

(a) from about 5 to about 90 percent, by weight, of units derived from a sulfo-containing monomer of the formula (I):



wherein each of R and R_1 is hydrogen, methyl or halo; R_2 is oxy or imino; and R_3 is alkylene or arylene, and

(b) from about 10 to about 95 percent, by weight, of units derived from an additional polymerizable, ethylenically unsaturated monomer.

4,357,410

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE PYRIDYLAZO(DIALKYLAMINO) PHENOL MAGENTA DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

Richard B. Anderson, and Norman W. Kalenda, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

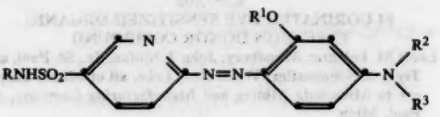
Filed Jul. 13, 1981, Ser. No. 282,611
Int. Cl.³ G03C 1/40, 1/10, 5/54, 7/00
U.S. Cl. 430—223 33 Claims

15. In a photographic assemblage comprising:

(a) a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material; and

(b) a dye image-receiving layer;

the improvement wherein said dye image-providing material is a nondiffusible compound having a releasable, pyridylazo(dialkylamino)phenol magenta dye moiety or precursor thereof, said compound having the formula:



wherein:

(a) R represents hydrogen, a hydrolyzable moiety, or may be taken together with the $NHSO_2$ group to which it is attached to form CAR;

(b) R^1 represents hydrogen, a hydrolyzable moiety or CAR;

(c) R^2 and R^3 each independently represents hydrogen, CAR, an alkyl group of 1 to about 6 carbon atoms, or they can be taken together with the nitrogen to which they are attached to form a 5- or 6-membered heterocyclic ring, or one of said R^2 and R^3 can be an aryl group having from 6 to about 10 carbon atoms; and

(d) CAR represents a ballasted carrier moiety capable of releasing said diffusible magenta dye moiety or precursor thereof as a function of development of said silver halide emulsion layer under alkaline conditions;

with the proviso that at least one of R, R^1, R^2 and R^3 is CAR.

4,357,411

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE 2-(2-PYRIDYLAZO)-4,5-BIS(TERTIARY AMINO)PHENOL BLACK DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

Norman W. Kalenda, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

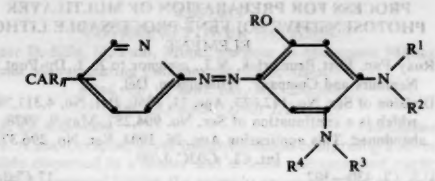
Filed Jul. 13, 1981, Ser. No. 282,612
Int. Cl.³ G03C 1/40, 1/10, 5/54, 7/00
U.S. Cl. 430—223 34 Claims

18. In a photographic assemblage comprising:

(a) a support having thereon a photosensitive silver halide emulsion layer having associated therewith a dye image-providing material; and

(b) a dye image-receiving layer;

the improvement wherein said dye image-providing material is a nondiffusible compound having a releasable, 2-(2-pyridylazo)-4,5-bis(tertiary amino)phenol black dye moiety or precursor thereof, said compound having the formula:



wherein:

(a) R represents hydrogen, a hydrolyzable moiety or CAR;

(b) R^1 and R^2 each independently represents an alkyl group of 1 to about 6 carbon atoms, CAR, or can be taken together with the nitrogen to which they are attached to complete a 5- or 6-membered heterocyclic ring;

(c) R^3 and R^4 each independently represents an alkyl group of 1 to about 6 carbon atoms, CAR, or can be taken together with the nitrogen to which they are attached to complete a 5- or 6-membered heterocyclic ring;

(d) CAR represents a ballasted carrier moiety capable of releasing said diffusible black dye moiety or precursor thereof as a function of development of said silver halide emulsion layer under alkaline conditions; and

(e) n is 0, 1 or 2, with the proviso that when n is 0, then at least one of R, R^1, R^2, R^3, or R^4 is CAR.

4,357,412

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE BRIDGED AZOAMINOPHENOL MAGENTA DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

Richard B. Anderson, and Norman W. Kalenda, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 13, 1981, Ser. No. 282,613

Int. Cl.³ G03C *1/40, 1/10, 5/54, 7/00*

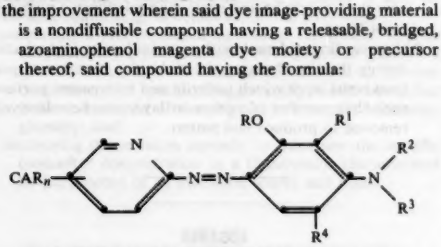
U.S. Cl. 430—223 **33 Claims**

15. In a photographic assemblage comprising:

(a) a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material; and

(b) a dye image-receiving layer;

the improvement wherein said dye image-providing material is a nondiffusible compound having a releasable, bridged, azoaminophenol magenta dye moiety or precursor thereof, said compound having the formula:



wherein:

(a) R represents hydrogen, a hydrolyzable moiety or CAR;

(b) R^1 represents hydrogen;

(c) R^2 represents an alkyl group of 1 to about 6 carbon atoms or CAR; or R^1 and R^2 represent an alkylene group which can be taken together with the atoms to which they are attached to complete a 5- or 6-membered heterocyclic ring;

(d) R^3 represents an alkyl group of 1 to about 6 carbon atoms or CAR;

(e) R^4 represents hydrogen; or R^3 and R^4 represent an alkylene group which can be taken together with the atoms to which they are attached to complete a 5- or 6-membered heterocyclic ring;

with the proviso that at least one of said 5- or 6-membered heterocyclic rings of (c) or (e) is present in said compound;

(f) CAR represents a ballasted carrier moiety capable of releasing said diffusible magenta dye moiety or precursor thereof as a function of development of said silver halide emulsion layer under alkaline conditions; and

(g) n is 0, 1 or 2, with the proviso that when n is 0, then at least one of R, R^2 or R^3 is CAR.

4,357,413

DRY-DEVELOPING PHOTOSENSITIVE DRY FILM RESIST

Abraham B. Cohen, Springfield, and Joseph E. Gervay, Red Bank, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 144,300, Apr. 28, 1980, Pat. No. 4,289,841, which is a continuation of Ser. No. 15,245, Feb. 26, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,347

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—253 **7 Claims**

1. A process for selectively modifying a surface, comprising laminating a dry-developing dry film resist layer to said surface, imagewise exposing said layer to actinic radiation, removing said support sheet from said layer, whereby the exposed area of said layer remains on said surface and the unexposed area of said layer remains on said support sheet to be removed therewith, treating the resultant exposed area of said surface to modify it, the exposed area of said layer protecting the remainder of said surface from said treating, said dry-developing dry film resist comprising a flexible support sheet and a photopolymerizable layer having a greater adhesion to said support than to said surface, but upon exposure to actinic radiation, having a greater adhesion to said surface than to said support sheet, said layer comprising (1) a dispersion of at least one polymer having a Tg below 70° C. in the form of spherical-like domains within a continuous phase of (2) at least one further polymer, the adhesion between the domains of the dispersed polymer and the further polymer being low relative to the cohesion of the continuous phase of second polymer, to provide an appreciable reduction in the cohesive strength of said layer as compared to when the dispersed polymer is not present in said layer, (3) free-radical polymerizable monomer, (4) and photopolymerization initiator for initiating the polymerization of said monomer upon exposure of said layer to actinic radiation, said monomer being present in an amount in excess of the absorptive capacity of said layer, said layer being dry developed by lamination to said surface, imagewise exposure of said layer to actinic radiation to cause the exposed area of said layer to achieve said greater adhesion to said surface, and peeling away said support sheet, the reduced cohesive strength of said layer enabling the unexposed area of said layer to break free from said exposed area and be removed therefrom by said peeling.

4,357,414

LAMINATE USEFUL FOR THE PRODUCTION OF PRINTING PLATES AND RELIEF PLATES

Heinrich Hartmann, Limburgerhof; Gerhard Hoffmann, Otterstadt, and Werner Lenz, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,705

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015340

Int. Cl.³ G03C *1/68, 1/70*

U.S. Cl. 430—275 **6 Claims**

1. A laminate suitable for the production of printing plates and relief plates, comprising

(a) a photosensitive layer of a mixture, soluble in water or in an aqueous solution, of

(a_1) at least one hydrophilic polymeric binder, together with

(a_2) at least one photopolymerizable ethylenically unsaturated monomer compatible therewith, and
(a_3) a photoinitiator which can be activated by actinic light,
(b) a dimensionally stable base, and
(c) a thin intermediate layer between layers (a) and (b), which is substantially formed from a mixture containing
(c_1) at least one polymeric binder which is compatible with the polymeric binder (a_1) of the layer (a), and
(c_2) at least one photopolymerizable ethylenically unsaturated monomer, compatible with (c_1), of the formula

$$CH_2=CR^1-COO-(CH_2-CHR^3-O-)_m-CO-NH$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad X$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad |$$
$$CH_2=CR^2-COO-(CH_2-CHR^4-O-)_n-CO-NH$$

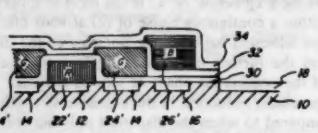
where R^1, R^2, R^3 and R^4 may be identical or different and each is H or C_1–C_8-alkyl, X is C_2–C_7-alkylene, a divalent aromatic C_6–C_{10}-hydrocarbon radical or isophoronylene, and m and n are each integers from 1 to 4 and may be identical or different, the intermediate layer being formed by applying the mixture to the base and then curing it at from 110° to 220° C.

4,357,415

METHOD OF MAKING A SOLID-STATE COLOR IMAGING DEVICE HAVING A COLOR FILTER ARRAY USING A PHOTOCROSSLINKABLE BARRIER

Susan E. Hartman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 127,605, Mar. 6, 1980, Pat. No. 4,315,978. This application Oct. 9, 1981, Ser. No. 310,168
Int. Cl.³ G03C *1/84*
U.S. Cl. 430—293 **6 Claims**



1. A method of making a solid-state color imaging device comprising a support having a surface comprising solid-state radiation-sensitive elements and bonding pad areas and, superimposed on said radiation-sensitive elements, in microregistration, a color filter array having at least three sets of elements, said method comprising the steps of:
(1) forming a layer of a radiation-sensitive, dyeable composition on said surface;
(2) exposing and developing said radiation-sensitive dyeable layer so as to form a set of islands superimposed on some of said solid-state radiation-sensitive elements, said islands having an area less than about 1.0×10^{-8} m^2;
(3) dyeing said islands formed in step (2) by contacting them with a solution comprising a solvent and a dye, thereby forming a set of filter elements;
(4) overall coating said dyed islands and the remainder of said surface with a layer of a photocrosslinkable, dye-impermeable polymer;
(5) exposing said photocrosslinkable, dye-impermeable polymer layer so as to crosslink said polymer at least in those areas corresponding to said islands, leaving unexposed those areas corresponding to said bonding pad areas;
(6) developing said photocrosslinkable, dye-impermeable polymer layer so as to remove said polymer from said bonding pad areas; and
(7) repeating steps (1) through (6) and then steps (1) through (3) using a different exposure in each step (2) and a different dye in each step (3) so as to produce second and third sets of filter elements.

4,357,416

PROCESS FOR PREPARATION OF MULTILAYER PHOTOSENSITIVE SOLVENT-PROCESSABLE LITHO ELEMENT

Roxy Fan, East Brunswick, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 142,023, Apr. 21, 1980, Pat. No. 4,311,784, which is a continuation of Ser. No. 904,257, May 9, 1978, abandoned. This application Aug. 26, 1981, Ser. No. 296,372
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—302 **17 Claims**

1. An image reproduction process which comprises imagewise exposing to actinic radiation a photosensitive litho element having in order from bottom to top a sheet support, a nonphotosensitive, solvent-soluble dye or pigment-containing layer having an optical density of at least 3.0 in the visible region of the spectrum and a maximum thickness of 0.015 mm, a solvent-processable nonsilver halide photosensitive layer, and optionally a cover sheet or overcoat layer; removing the cover sheet or overcoat layer, if present, washing out either the exposed or unexposed areas of the solvent-processable photosensitive layer and simultaneously or subsequently washing out the nonphotosensitive layer in the areas from which the photosensitive layer had been removed.

4,357,417

HIGH RESOLUTION LITHOGRAPHY USING PROTONS OR ALPHA PARTICLES

John Bartko, Monroeville; Patrick E. Felice, Hempfield Township, Westmoreland County, and Phillip D. Blais, Washington Township, Fayette County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 32,797, Apr. 24, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,648
Int. Cl.³ A61K *27/02*; G03F *5/00*
U.S. Cl. 430—323 **13 Claims**

1. A method for processing a resist layer to produce a selected pattern therein, comprising the steps of:
(a) positioning a metal mask having at least a first region impervious to particles of a selected energy and at least a second region transparent to particles of said selected energy in overlying and contacting relationship with said resist layer;
(b) bombarding said mask with particles having said selected energy thereby changing the molecular structure of portions resist layer which underlie said transparent portions such that portions of said resist layer can be selectively removed to produce said pattern.

4,357,418

PHOTOGRAPHIC ELEMENTS WITH IMPROVED SURFACE CHARACTERISTICS

Luigi Cellone, Albisola Mare, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 26, 1981, Ser. No. 266,647
Claims priority, application Italy, May 26, 1980, 48795 A/80
Int. Cl.³ G03C *5/26*
U.S. Cl. 430—539 **8 Claims**

1. A photographic element comprising a support and a plurality of gelatine layers which comprise a silver halide emulsion layer and a non-photosensitive external gelatin protective layer, wherein said external gelatin protective layer comprises a reflectance reducing quantity of water-soluble dextran having a molecular weight of at least 100,000 which is incompatible with gelatin.

4,357,419

COVERING POWER IN FILMS

Peter D. Sills, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 2, 1981, Ser. No. 250,393
Int. Cl.[3] G03C 1/02, 1/28
U.S. Cl. 430—564 15 Claims

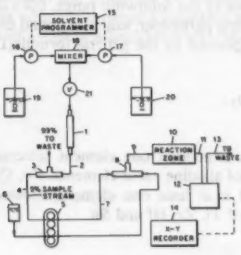
1. A photographic silver halide emulsion comprising a silver halide dispersed in a binder and at least one saturated cyclic oxime compound having the oximido group attached to a ring carbon, said saturated cyclic oxime compound being present in an amount sufficient to increase the covering power and contrast of the developed silver of the silver halide emulsion.

4,357,420

BIOLUMINESCENCE METHODS FOR ENZYMATIC DETERMINATIONS

William D. Bostick, Oak Ridge; Mark S. Denton, Clinton, and Stanley R. Dinsmore, Norris, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 28, 1981, Ser. No. 258,350
Int. Cl.[3] C12Q 1/66, 1/50, 1/32; C12M 1/34
U.S. Cl. 435—8 6 Claims



1. A nonreferenced method for continuous, on-line and rapid detection of diagnostically useful biomarkers, which are symptomatic of disease or trauma-related tissue damage, said method characterized by operability on an authentic sample of complex biological fluids, containing a plurality of said biomarkers, comprising, in combination, the steps of:

contacting a predetermined amount of the sample with an enzymatically effective amount of reactants to generate a specific bioluminescent emission correlatable to the concentration of a specific diagnostically useful biomarker isolated by liquid chromatography from said biomarker plurality; and

monitoring the emission intensity to determine the specific biomarker concentration in a fluorometer characterized by the absence of an excitation source and filters.

4,357,421

SYNTHETIC GENE CODING FOR INFLUENZA HEMAGGLUTININ

John S. Emtage, High Wycombe, and Norman H. Carey, Chinnor, both of England, assignors to G. D. Searle & Co., Skokie, Ill.

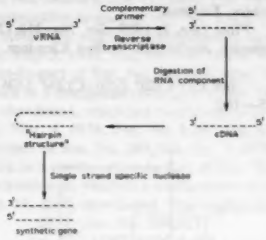
Filed Mar. 24, 1980, Ser. No. 132,960
Claims priority, application United Kingdom, Apr. 2, 1979, 7911487
Int. Cl.[3] C12N 15/00
U.S. Cl. 435—68 20 Claims

1. A process for the production of a synthetic gene for an influenza haemagglutinin comprising:

(a) subjecting isolated influenza vRNA to the action of reverse transcriptase to produce a double-stranded RNA/DNA hybrid;

(b) digesting the RNA component of the hybrid;

(c) treating the residual DNA component of the hybrid to produce a double-stranded DNA molecule having one "hairpin" end; and



(d) treating the "hairpin" structure with a single strand specific nuclease to produce a bimolecular double-stranded copy of the vRNA.

4,357,422

METHOD OF ENHANCING INTERFERON PRODUCTION

Donald J. Giard, Bedford, and Robert J. Fleischaker, Jr., Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 14, 1980, Ser. No. 177,945
Int. Cl.[3] C12P 21/00
U.S. Cl. 435—68 15 Claims

1. In the production of interferon induced in cultured animal cells involving distinct induction and production phases, the improvement of initiating the production, at an elevated temperature, maintaining the elevated temperature for at least about one hour and subsequently reducing the temperature by at least about 3° C. to provide a reduced temperature for the balance of the production, said reduced temperature being maintained for a period of time sufficient to produce a majority of the interferon.

4,357,423

MICROBIAL HETEROPOLYSACCHARIDE

Roger B. Cox, Reading, and David C. Steer, Wirral, both of England, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 166,220, Jul. 7, 1980, Pat. No. 4,329,448. This application Dec. 16, 1981, Ser. No. 331,706
Claims priority, application United Kingdom, Jul. 10, 1979, 7924040; Dec. 20, 1979, 7943878
Int. Cl.[3] C12P 19/04; C12N 15/00; C12R 1/12
U.S. Cl. 435—101 3 Claims

1. A process for the production of Biopolymer PS 87, a heteropolysaccharide which comprises from 40 to 45% by weight of glucose, from 10 to 20% by weight galactose, from 25 to 30% by weight mannose, from 6 to 13% by weight glucuronic acid and from 0 to 1.5% by weight fucose, a 1% by weight solution of Biopolymer PS 87 having pseudoplastic properties, a consistency at 20° C. of at least 150 poise and a yield stress value at 20° C. of at least 30 dynes/cm^2 which comprises the steps of:

(i) cultivating a strain of a micro-organism contaiing genetic material specifying Biopolymer PS 87 synthesis under submerged aerobic conditions in an aqueous culture medium comprising a source of carbon, a source of nitrogen, a source of iron, a source of magnesium and a source of phosphorus, the pH of the culture medium being maintained at a value of from 4.5 to 7.5, until substantial formation of Biopolymer PS 87 has occurred, and

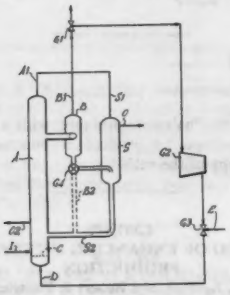
(ii) isolating Biopolymer PS 87 from the culture medium.

4,357,424

PROCESS FOR THE CONTINUOUS PRODUCTION OF FERMENTATION ALCOHOL

John D. Bu'Lock, Marple, England, assignor to Sim-Chem Limited, Cheshire, England

Filed Dec. 2, 1980, Ser. No. 212,125
Claims priority, application United Kingdom, Dec. 13, 1979, 7943065
Int. Cl.³ C12P 7/06; C12M 1/08
U.S. Cl. 435—162 9 Claims



1. A process for the continuous production of fermentation alcohol, comprising the steps of effecting fermentation of a substantially continuous supply of a liquid substrate by a dense suspension of a suitable microorganism in a reaction column wherein the suspension is maintained in a well mixed state, thereby producing a liquid/biomass mixture, causing said mixture in an upper region of the column to pass into a degassing zone wherein less turbulent conditions readily permit degassing of the mixture, causing at least a part of the degassed mixture to flow from the degassing zone into a settling zone wherein quiescent conditions permit the biomass to settle out, returning substantially all of the settled biomass to a lower region of the reaction column and reintroducing it into the fermentation process therein to maintain the process, removing evolved gases from the upper end of the reaction column and from the degassing zone, reintroducing at least a portion of said evolved gases into the fermentation process in the lower region of the reaction column thus to maintain said well mixed state therein, and removing from the settling zone clarified liquor containing product alcohol.

4,357,425

PROCESS FOR PRODUCING L-AMINO ACID OXIDASE

Eiichi Yoshino; Hidehiko Ishikawa; Fumitaka Inoue; Masaki Takada, and Hideo Misaki, all of Shizuoka, Japan, assignors to Toyo Jozo Company, Ltd., Tokyo, Japan

Filed Apr. 23, 1981, Ser. No. 256,901
Claims priority, application Japan, Apr. 30, 1980, 55-057180
Int. Cl.³ C12N 9/06; C12R 1/645
U.S. Cl. 435—191 2 Claims

1. A process for producing L-amino acid oxidase which comprises culturing in a culture medium a microorganism which produce L-amino acid oxidase and is a member of the genus Colletotrichum, and recovering L-amino acid oxidase from the cells cultured.

4,357,426

HUMIDITY SENSITIVE CERAMICS

Michihiro Murata, Kyoto, and Shinsei Okabe, Takatsuki, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Dec. 17, 1981, Ser. No. 332,096
Claims priority, application Japan, Dec. 22, 1980, 55/182381
Int. Cl.³ C04B 35/50
U.S. Cl. 501—135 1 Claim

1. A humidity sensitive ceramics comprising a sintered body consisting essentially of a semiconductive compound oxide with a perovskite structure and a compound oxide, said semiconductive compound oxide having a composition expressed by the general formula(I):

$$A_{1-x}A'_xBO_{3-\delta} \quad \text{(I)}$$

wherein A is at least one element selected from the group consisting of rare earth elements with atomic numbers 57 to 71, yttrium and hafnium, A' is at least one element selected from the group consisting of alkaline-earth metals, B is at least one element selected from the group consisting of transition elements with atomic numbers 23 to 30, x is a mole fraction and takes a value of the following range, $0 \leqq x \leqq 1$, and δ is a non-stoichiometric parameter, said compound oxide having a composition expressed by the general formula(II):

$$AMO_3 \quad \text{(II)}$$

wherein A is at least one element selected from the group consisting of alkaline earth elements, Zn, Cd, Fe, Co, Ni, Mn and Pb, M is at least one element selected from the group consisting of Ti, Zr, Hf and Sn.

4,357,427

ECONOMIC PREPARATION OF ALUMINA SUITABLE FOR ISOSTATIC PRESSING AND SINTERING

Shih-Ming Ho, Penn Hills; Bulent E. Yoldas, Churchill Borough, and Douglas M. Mattox, Forest Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 19, 1981, Ser. No. 312,575
Int. Cl.³ C04B 35/44
U.S. Cl. 501—153 7 Claims

1. The method of preparing finely divided alumina doped with a small predetermined percentage of magnesia and which is suitable for being isostatically pressed into tubular form and then sintered to translucent light-transmitting tubular form to a density which closely approximates theoretical, which method comprises:

forming a mixed clear solution substantially comprising a predetermined amount of aluminum alkoxide of the formula $Al(OR)_3$ where R contains from one to six carbon atoms and a small predetermined amount of water soluble magnesium salt which will decompose on heating to magnesia or magnesium alkoxide of the formula $Mg(OR)_2$ where R contains from one to six carbon atoms, and wherein the atom ratio of Al to Mg in said mixed solution is that atom ratio which is desired in the prepared finely divided magnesia-doped alumina;

including with the mixed clear solution a substantial excess of water over that amount required to completely hydrolyze the alkoxide present to form a milky slurry and adding thereto a small predetermined amount of selected acid which is effective to peptize said slurry, and allowing the formed milky slurry to become fully peptized and form a clear sol;

converting the formed clear sol to a finely divided and dried powder; and

calcining the finely divided and dried powder for a predetermined time at a temperature in the range of from about 700° C. to about 900° C., with the crystalline structure of the calcined powder predominately being that of delta alumina.

4,357,428

FOAMABLE COMPOSITION

Stuart L. Watson, South Charleston, and Paul M. Westfall, Saint Albans, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

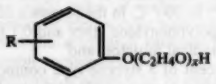
Division of Ser. No. 243,083, Mar. 12, 1981, Pat. No. 4,325,831. This application Dec. 23, 1981, Ser. No. 333,898

Int. Cl.³ C08J 9/28, 9/30

U.S. Cl. 521—65 **9 Claims**

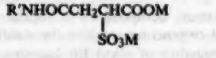
1. A foamable composition having an acid pH comprising a resin or latex formulation and a mixture for foaming said resin or latex formulation which comprises a foamable mixture of:

(a) 2 to 20 parts of a highly ethoxylated alkylphenol of the formula:



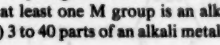
wherein R is a saturated or unsaturated, linear or branched alkyl having from 7 to 20 carbon atoms and x has an average value of from 20 to 200;

(b) 2 to 20 parts of an alkali metal N-alkyl sulfosuccinamate of the formula:



wherein R' is a saturated or unsaturated, linear or branched alkyl having from 16 to 24 carbon atoms and M is hydrogen or an alkali metal atom with the proviso that at least one M group is an alkali metal atom; and

(c) 3 to 40 parts of an alkali metal alkyl sulfate of the formula:



wherein R" is a saturated or unsaturated, linear or branched alkyl having from 7 to 24 carbon atoms and M' is an alkali metal atom;

wherein said parts of components (a), (b) and (c) are parts per 100 parts by weight of dry resin (phr) present in said resin or latex formulation in said foamable composition.

4,357,429

PROCESS FOR THE PRODUCTION OF ALKALI METAL SILICATE-ORGANIC PLASTICS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 284,486, Jul. 17, 1981, Pat. No. 4,332,712, which is a continuation-in-part of Ser. No. 233,151, Feb. 10, 1981, Pat. No. 4,303,768, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908, which is a continuation-in-part of Ser. No. 036,350, May 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Mar. 19, 1982, Ser. No. 359,917

Int. Cl.³ C08J 9/04, 3/06

U.S. Cl. 521—100 **22 Claims**

1. The process for the production of polyurethane silicate foamed products by the following steps:

(a) mixing and reacting an aqueous alkali metal silicate solution in the amount of 100 parts by weight, a polymerable unsaturated organic compound in the amount of 5 to 100 parts by weight, a mono- or polycarboxylic acid salt forming compound in the amount of 1 to 10 parts by weight, an organic epoxide compound, selected from the group consisting of ethylene oxide, propylene oxide, epichlorohydrin and mixtures thereof, in the amount of 1 to 50 parts by weight, and a catalytic amount of an initiator, thereby

(b) producing an alkali metal silicate-organic plastic, then

(c) adding and reacting 5 to 100 parts by weight of a polyisocyanate or polyisothiocyanate, up to 10% by weight of a polyisocyanate initiator, up to 20% by weight of an emulsifier, up to 50% by weight of a blowing agent, and up to 20% by weight of a foam regulator, percentages based on the weight of the reaction mixture, thereby

(d) producing a foamed polyurethane silicate product.

4,357,430

POLYMER/POLYOLS, METHODS FOR MAKING SAME AND POLYURETHANES BASED THEREON

Russell VanCleve, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 2, 1981, Ser. No. 308,052

Int. Cl.³ C08G 18/14

U.S. Cl. 521—128 **41 Claims**

1. A normally liquid, stable polymer/polyol composition formed by polymerizing, in the presence of a free radical catalyst, (1) from about 10 to about 50 weight percent of a mixture of acrylonitrile and an ethylenically unsaturated comonomer or comonomers in a weight ratio, respectively, of from about 80:20 to about 20:80, dissolved or dispersed in (2) from about 50 to about 90 weight percent of a polyol mixture comprising (a) a base polyol having a number average molecular weight of at least about 500 and (b) a coupled polyol consisting essentially of the reaction product of a polyol having a functionality in excess of 2 reacted with a polyisocyanate in such proportion that the ratio of hydroxyl groups to isocyanato groups is greater than 1, the coupled polyol being present in an amount sufficient to stabilize the resulting polymer/polyol.

4,357,431
BALL-POINT PEN INK COMPOSITION ERASABLE BY RUBBER ERASER

Nobuyuki Murakami, Soka, and Hiroshi Miyashita, Koshigaya, both of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP80/00318, § 371 Date Jun. 24, 1981, § 102(e) Date Jun. 24, 1981, PCT Pub. No. WO81/01858, PCT Pub. Date Jul. 9, 1981
PCT Filed Dec. 22, 1980, Ser. No. 280,015
Int. Cl.³ C09D *13/00*
U.S. Cl. 523—161 2 Claims

1. A ball-point pen ink composition erasable by a rubber eraser, which comprises a polymeric substance selected from the group consisting of polyisobutylene and an ethylene-propylene copolymer; a wax which is solid or semi-solid at room temperature and is selected from a group consisting of animal waxes, vegetable waxes, petroleum waxes and paraffinic hydrocarbons; pigment particles having a particle size of 0.01 to 5μ; and a low-boiling solvent having a boiling point lower than 200° C.; said wax being present in an amount of 20 to 60 parts by weight, said pigment particles being present in an amount of 50 to 150 parts by weight and said solvent being present in an amount of 70 to 300 parts by weight, per 100 parts by weight of said polymeric substance.

4,357,432
VULCANIZATES

Douglas C. Edwards, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed May 11, 1981, Ser. No. 262,689
Int. Cl.³ C08K *3/04, 3/36;* C08J *3/24, 3/16*
U.S. Cl. 523—351 11 Claims

1. An improved rubbery vulcanizate is provided by the vulcanization of a mixture comprising vulcanization active agents, at least two synthetic polymers and at least two fillers, said at least two fillers being one of silica or calcium silicate and the other being carbon black, said at least two synthetic polymers being (A) a C_4–C_6 conjugated diolefin containing polymer which contains, per 100 grams of polymer, chemically bound in the polymer from about 1.5 to about 80 millimoles of hydroxy groups or from about 4 to about 60 millimoles of epoxy groups and selected from styrene-butadiene-hydroxyethyl acrylate, styrene-butadiene-hydroxyethyl methacrylate, styrene-butadiene-glycidyl acrylate, styrene-butadiene-glycidyl methacrylate and styrene-butadiene-methallyl glycidyl ether polymers, which polymer is mixed with said silica or calcium silicate and optionally other compounding ingredients, and (B) a C_4–C_6 conjugated diolefin containing polymer which is mixed with said carbon black and optionally other compounding ingredients prior to being mixed with the polymer A-filler mixture, the mixture comprising, per 100 parts by weight of total polymers, from about 20 to about 80 parts by weight of polymer A, from about 20 to about 80 parts by weight of polymer B, from about 5 to about 100 parts by weight of silica or calcium silicate, from about 5 to about 100 parts by weight of carbon black to provide a weight ratio of silica or calcium silicate to carbon black of from about 20:80 to about 65:35 and optionally an additive selected from (i) 0.5 to 5 parts by weight of an amine of the formula

$$R—NH_2,\ R—NHR' \text{ or } R—NR''R'''$$

where R is a C_4–C_{30} linear or branched alkyl or alkylene group which may contain one NH_2 or NH group or a C_4–C_{30} cycloalkyl group or a C_7–C_{20} alkaryl group connected to the nitrogen atom through the alkyl component of the alkaryl group, R' is a C_1–C_{30} linear or branched alkyl or alkylene group and R'' and R''', which may be the same or different, is a C_1–C_{10} alkyl group, or (ii) from about 1 to about 5 parts by weight of an organic acid or salt thereof selected from the C_{15}–C_{20} saturated or unsaturated fatty acids or the alkali metal, alkaline earth metal or ammonium salts thereof, or (iii) from about 1 to about 10 parts by weight of magnesium oxide, said silica or calcium silicate having been mixed with said polymer A and said additive under conditions of shear at a temperature of from about 100° C. to about 190° C. prior to being mixed with the polymer B-carbon black mixture.

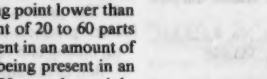
4,357,433
FLAME RETARDANT POLYPHENYLENE ETHER RESIN COMPOSITIONS

Diza P. Braksmayer, Cranbury, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jun. 12, 1981, Ser. No. 273,144
Int. Cl.³ C08K *5/53*
U.S. Cl. 524—139 21 Claims

1. A flame retardant polyphenylene ether resin composition comprising:

(a) from about 3 parts to about 10 parts by weight of a phosphine oxide having the formula:



$$(HOCH_2CHCH_2)_{(3-n)}P(R_2)_n$$

wherein R_1 may be the same or different radicals selected from the group consisting of hydrogen and the methyl radical, R_2 is an alkyl radical of 4 to 8 carbon atoms and n is either zero or one; and

(b) 100 parts by weight of a polyphenylene oxide graft copolymer composition comprising

(i) from about 30 to about 90 weight percent of a graft copolymer free from polyphenylene ether homopolymers prepared by polymerizing 20 to 200 parts by weight of styrene-type compound at a temperature in the range from 130° C. to 200° C. in the presence of 100 parts by weight of a polyphenylene ether and 0.1 to 15 parts by weight of a radical initiator, and

(ii) 10 to 70 weight percent of a styrene-type compound polymer having a number average molecular weight in the range from 50,000 to 200,000.

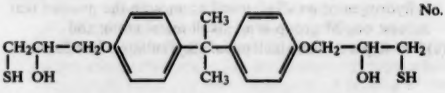
4,357,434
STABILIZED HALOGEN-CONTAINING RESIN COMPOSITIONS

Takeshi Miyoshi, Fujisawa; Koji Takeuchi, Yokohama; Tatsuo Nukui, Yono, and Hidetaka Oshida, Toda, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Mar. 16, 1981, Ser. No. 244,111
Int. Cl.³ C08K *5/57*
U.S. Cl. 524—178 7 Claims

1. A halogen-containing resin composition comprising a halogen-containing resin and organo tetravalent tin stabilizer selected from the group consisting of alkyl tin laurates and alkyl tin maleates and a stabilizer assistant being one of the hydroxymercaptan compounds having the following structural formula No. 1 to No. 5.

No. 1



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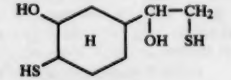

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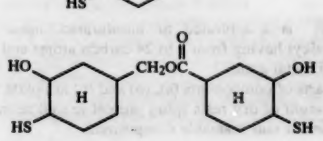

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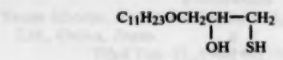

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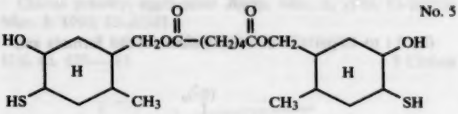


No. 5

4,357,435

NOVEL POLYMERS OF ALKYL METHACRYLATES

Sheldon N. Lewis, Willow Grove, and Richard A. Haggard, Fort Washington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 517,336, Oct. 23, 1974, Pat. No. 4,056,559, which is a continuation-in-part of Ser. No. 371,921, Jun. 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 137,057, Apr. 23, 1971, abandoned. This application Sep. 29, 1977, Ser. No. 838,043

Int. Cl.³ C08L *25/08, 33/06*

U.S. Cl. 524—239 6 Claims

1. In a polymeric composition comprising a polymeric material and a plasticizing amount of a polymer, the improvement wherein the polymer is an anionically-polymerized addition polymer of at least one ester of methacrylic acid selected from the group consisting of (C_1–C_{24}) alkyl esters of methacrylic acid, di(C_1–C_4) alkylamino (C_2–C_4) alkyl esters of methacrylic acid, (C_2–C_{12}) alkoxyalkyl esters of methacrylic acid, (C_7–C_{12}) aryloxyalkyl esters of methacrylic acid, (C_7–C_{12}) aralkoxyalkyl esters of methacrylic acid, and (C_7–C_{10}) aralkyl esters of methacrylic acid, and, optionally, other anionically copolymerizable monomers, wherein n, the average chain length of the polymer is about 6 to 50 mers.

4,357,436

COMPOSITE INSULATING MATERIAL AND PROCESS

Jerry Zucker, Charleston; Carl E. Chivers, Hanahan, and Donald E. Jefferson, Summerville, all of S.C., assignors to RM Industrial Products Company, Inc., North Charleston, S.C.

Filed Jun. 2, 1980, Ser. No. 155,583

Int. Cl.³ C08K *7/04*

U.S. Cl. 524—448 12 Claims

1. A thermal insulating material comprising a mixture of heat-resistant solids and a curable binder system, said heat-resistant solids comprising, of the total weight of the mixture, from about 25 to about 65 percent inorganic fibers and from zero to about 55 percent solid particulate fillers, said binder comprising, of the total weight of the mixture, from about 5 to 40 percent elastomer, said elastomer serving as a binder for said solids prior to the curing of said binder system, and from about 2.5 to about 35 percent silicone resin, said resin serving as a binder for said solids often curing of said binder system.

4,357,437

PROCESS FOR THE PRODUCTION OF WATER-SOLUBLE HYDROLYZED PRODUCTS OF POLYACRYLONITRILE POLYMERS

Helmut Huhn, Walsrode; Werner Karstens, Bomlitz, and Lutz Hoppe, Walsrode, all of Fed. Rep. of Germany, assignors to Wolff Walsrode AG, Leverkusen, Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 286,262

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1980, 3029027

Int. Cl.³ C08F *8/12*

U.S. Cl. 524—458 8 Claims

1. A process for the production of a watersoluble hydrolysis product of an acrylonitrile homopolymer and/or copolymer which comprises polymerising acrylonitrile and, optionally, other monomers, in aqueous media, at a temperature of from 35° C. to 80° C. in the presence of from 1 to 8% by weight, based on the monomer to be polymerised of a hydrolysed acrylonitrile homopolymer and/or copolymer having an intrinsic viscisity [η] of from 0.8 to 2.5 dl/g as protective colloid and hydrolysing the resulting polymer.

4,357,438

COATABLE WATER-SETTING PLASTIC ORGANOPOLYSILOXANE MOLDING COMPOSITIONS

Hans Sattlegger, Odenthal; Karl Schnurrbusch, Leverkusen; Manfred Boll, Burscheid, and Hans Friemann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 12, 1981, Ser. No. 272,872

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025376

Int. Cl.³ C08K *5/01*

U.S. Cl. 524—490 5 Claims

1. In a plastic organopolysiloxane molding composition which can be stored in the absence of water and which changes into an elastomeric molding or coating under the effect of water or air, obtained by mixing an α,ω-dihydroxy polydiorgano siloxane with a carboxylic acid amidoalkyl alkoxy silicon compound as a crosslinking agent and a titanic acid ester complex and optionally with a filler, pigment and/or heavy metal salt known to accelerate the crosslinking reaction, the improvement which comprises including in the mixture about 0.2 to 15% by weight, based on the mixture as a whole, of a branched and/or cyclic paraffin hydrocarbon containing from 6 to 24 carbon atoms, whereby the resulting material after hardening can form a strongly adherent bond with a lacquer applied thereto.

4,357,439

SHELF-STABLE ETHYLENE-α-OLEFIN (DIENE) ELASTOMER POWDERS COMPRISING A RELEASE AGENT AND A PROCESS FOR THE PRODUCTION THEREOF

Harald Blümel, and Horst G. Haag, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Aug. 21, 1981, Ser. No. 295,045

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1980, 3031487; Aug. 21, 1980, 3031508; Aug. 21, 1980, 3031556

Int. Cl.³ C08L *23/16*

U.S. Cl. 524—493 13 Claims

1. A process for producing a shelf-stable ethylene-α-olefin (diene) elastomer powder which comprises a release agent, comprising grinding crumbs or preliminarily comminuted particles of an ethylene-α-olefin (diene) elastomer having a green strength of 5–20 MPa and a Mooney viscosity ML (1+4) 100° C. of 50–150, and, prior to, during or after the grinding step, adding 0.5–10 parts by weight, per 100 parts by weight of the ethylene-α-olefin (diene) elastomer, of a release agent which is

(a) polyethylene of a density of 0.910–0.975 g/cm³, a viscosity number of 50–330 cm³/g and a melt index of 0.2–50 g/10 min, polypropylene of a density of 0.90–0.910 g/cm³, a viscosity number of 100–1000 cm³/g and a melt index of 0.1–50 g/10 min, polybutene-1 of a density of 0.910–0.975 g/cm³, a viscosity number of 100–1000 cm³/g and a melt index of 0.1–100 g/10 min, or polyvinyl chloride of a viscosity number of 50–200, all having an average secondary particle size of 5–50 μm;

(b) a synthetic amorphous silicic acid (SiO_2) having an average primary particle size of 0.01–0.2 μm and an average secondary particle size of 5–35 μm; a naturally occurring silicic acid, at least 65% by weight of which has an average primary particle diameter of <5 μm and an average secondary particle size of 7–50 μm; or a silicic-acid-containing mineral having an average primary particle size of 0.5–2.5 μm and an average secondary particle size of 10–35 μm; or

(c) a carbon black with an average primary particle size of <0.3 μm.

4,357,440

WET-ADHESION AID

David J. Schreck, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 74,083, Sep. 10, 1979, abandoned. This application Jun. 10, 1980, Ser. No. 158,221

Int. Cl.³ C08L *33/00*

U.S. Cl. 524—535 **2 Claims**

1. In a latex coating composition, the improvement of having present therein as a wet-adhesion aid from 0.1 to 10 weight percent of 2-hydroxy-3-t-butylamino-1-propyl methacrylate, based on the weight of the latex.

4,357,441

AQUEOUS EMULSION OF THERMALLY REACTIVE POLYURETHANE COMPOSITION

Tamotu Hamamura; Nobuji Inoue, and Kazuo Sato, all of Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Apr. 16, 1981, Ser. No. 254,721

Claims priority, application Japan, Apr. 25, 1980, 55/55862

Int. Cl.³ C08L *75/08, 75/12*

U.S. Cl. 524—591 **12 Claims**

1. In an aqueous emulsion of a thermally reactive polyurethane-forming composition, comprising (a) a uniformly dispersed hydrophobic, blocked polyisocyanate having a plurality of masked isocyanate groups, said groups being only non-electrolytic masked isocyanate groups capable of regenerating free isocyanate groups at an elevated temperature, and (b) a dispersing effective amount of a surfactant, the improvement wherein said surfactant is a thermally reactive anionic surfactant of the formula $[R—X—(CH_2CH_2O)_l CONH]_m A—(NHCOSO_3Na)_n$ wherein R is a C_{7-26} alkyl, alkaryl or alkenyl group; X is —O—, —COO—, —S— or —NR′— wherein R′ is a polyoxyethylene group or a C_{1-22} alkyl group; l is 0 or an integer from 1 to 200; m and n are each an integer from 1 to 4, the sum of m+n being not greater than 5; and A is an organic bridging group.

4,357,442

STABLE LATEXES OF CARBOXYL CONTAINING POLYMERS

Pravinchandra K. Shah, Sheffield Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 7, 1981, Ser. No. 328,321

Int. Cl.³ C08K *5/36*

U.S. Cl. 524—745 **12 Claims**

1. A process for preparing viscosity stable latexes of polymers containing bound carboxyl groups comprising polymerizing butadiene-1,3 or an ester of acrylic or methacrylic acids with an olefinically unsaturated carboxylic acid in an aqueous emulsion with a free radical forming initiator in the presence of 0.05 to 5 weight parts of an olefin sulfonate emulsifier having the formula $RCH{=}CH(CH_2)xSO_3Y$ wherein x is 0 to 6 and Y is an alkali metal ion and R is C_{12} to C_{16}.

4,357,443

ONE PACKAGE, MOISTURE CURABLE, ORGANOPOLYSILOXANE COMPOSITIONS AND METHOD FOR MAKING

Mary A. White, El Cerrito, Calif., and Diane V. Brezniak, Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,456

Int. Cl.³ C08L *43/00*

U.S. Cl. 524—860 **6 Claims**

1. One-package, room temperature vulcanizable organopolysiloxane compositions comprising by weight,

(A) 100 parts of a silanol-terminated polydiorganosiloxane consisting essentially of chemically combined units of the formula,

$$\begin{array}{c} R \\ -SiO- \\ R \end{array},$$

(B) 0.1 to 10 parts of an alkoxy silane of the formula and

$$(R^1O)_{4-a}\overset{(R^2)_a}{\overset{|}{Si}},$$

(C) an effective amount of either a V^{+3} to V^{+5} inclusive vanadium compound soluble in the room temperature vulcanizable organopolysiloxane composition, or a V^{+3} to V^{+5} inclusive vanadium compound insoluble in the room temperature vulcanizable organopolysiloxanee composition, but capable of forming soluble hydrolysis products upon contact with atmospheric moisture while in the presence of the room temperature vulcanizable organopolysiloxane composition.

6. A room temperature vulcanizable organopolysiloxane composition in accordance with claim 1, reinforced with a silica filler.

4,357,444

METHOD FOR MECHANICALLY SUBDIVIDING RUBBERY, TACKY POLYMER

Patrick E. Hillman, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 12, 1981, Ser. No. 320,982

Int. Cl.³ C08L *7/00, 9/00*

U.S. Cl. 525—232 **15 Claims**

1. In the method wherein rubbery, tacky polymer is mechanically subdivided, the improvement comprising conducting the mechanical subdivision in the presence of fine particles of substantially thermoplastic halogenated polymer.

4,357,445

PROCESS FOR THE PRODUCTION OF CROSS-LINKED GRAFT COPOLYMERS

Ulrich Steffen, Dormagen; Heinrich Alberts, and Leo Morbitzer, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,998

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1980, 3008747

Int. Cl.³ C08L *51/00*; C08F *263/04*

U.S. Cl. 525—244 **6 Claims**

1. A process for the production of a cross-linked graft copolymer by the radically initiated precipitation copolymerization of:

(A) from 10 to 80%, by weight, of an ethylene/vinyl ester copolymer as graft base; and

(B) from 90 to 20%, by weight, of a mixture to be grafted of

(I) from 93.9 to 48%, by weight, of styrene;

(II) from 5 to 30%, by weight, of acrylonitrile;

(III) from 1 to 10%, by weight, of a cross-linking agent having two or more carbon-carbon double bonds, and

(IV) from 0.1 to 12%, by weight, of another monoolefinically unsaturated copolymerizable monomer; such that the sum of (A) and (B) and (I) to (IV) is in each case 100%, by weight, wherein the ungrafted base is precipitated by the addition of a precipitating agent simultaneously with the precipitating cross-linked graft copolymer.

4,357,446

CURABLE COMPOSITION OF HALOGEN-CONTAINING POLYMER

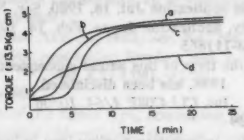
Yasuo Matoba, Toyonaka, Japan, assignor to Osaka Soda Co. Ltd., Osaka, Japan

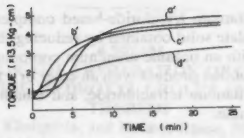
Filed Feb. 27, 1981, Ser. No. 238,969

Claims priority, application Japan, Mar. 3, 1980, 55-26901; Mar. 3, 1980, 55-26902

Int. Cl.³ C08F *8/34*; C08C *19/22*

U.S. Cl. 525—281 **5 Claims**

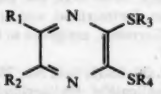




1. A curable composition of a halogen-containing polymer composed of

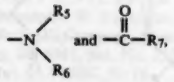
(1) 100 parts by weight of a halogen-containing polymer selected from the group consisting of chlorinated polyethylene, a chlorinated ethylene/propylene copolymer, a chlorinated ethylene/propylene/non-conjugated diene terpolymer, chlorosulfonated polyethylene, polyvinyl chloride, chlorine-containing acrylic rubbers, chlorinated butyl rubber, brominated butyl rubber, fluorine rubber, polychloroprene, polyepichlorohydrin, an epichlorohydrin/allyl glycidyl ether copolymer, an epichlorohydrin-/ethylene oxide copolymer, and an epichlorohydrin/ethylene oxide/allyl glycidyl ether terpolymer,

(2) as a crosslinking agent, about 0.1 to about 10 parts by weight of a 2,3-dimercapto-pyrazine or -quinoxaline compound having the following formula

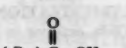


(I)

wherein R_1 and R_2 are identical or different and represent a hydrogen atom or a C_1–C_8 alkyl group, or R_1 and R_2 are bonded together to form a benzene ring which may be substituted by at least one substituent selected from the class consisting of halogen atoms, a nitro group, a carboxyl group, lower alkyl groups and lower alkoxy groups; and R_3 and R_4 are identical or different and represent a member selected from the class consisting of a hydrogen atom,



or R_3 and R_4 are bonded together to form >C═O, in which R_5 and R_6 are identical or different and represent a hydrogen atom or a C_1–C_{12} group selected from the class consisting of alkyl groups and cycloalkyl groups and R_7 represents a C_1–C_{18} group selected from the class consisting of alkyl groups and aryl groups or R_7 represents



wherein R_8 represents a C_1–C_8 group alkylene group, and

(3) as an acid acceptor, about 0.5 to about 50 parts by weight of a compound of a metal of Group II or IVa of the periodic table.

4,357,447

POLYMERE N-HALOGENAMIDE AUF BASIS VON ACRYL-UND METHACRYLAMID

Hans-Georg Zengel, Kleinwallstadt; Manfred Bergfeld, Erlenbach, Mechenhard, and Rainer Zielke, Erlenbach, all of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Filed Mar. 18, 1980, Ser. No. 131,368

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1979, 2931572

Int. Cl.³ C08F *8/22*

U.S. Cl. 525—329.4 **4 Claims**

1. Polyfunctional N-chloramide derivatives of homo- or copolymers of acrylamide or methacrylamide having mean molecular weight from 1000 to 10,000.

4,357,448

TWO STEP PROCESS FOR POLYMERIZING ETHYLENE

Kazumi Tsubaki; Hiroshi Morinaga; Yoshiho Matsuo, and Takeshi Iwabuchi, all of Ichihara, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 33,512, Apr. 26, 1979, abandoned. This application May 20, 1980, Ser. No. 151,637

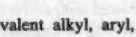
Claims priority, application Japan, May 10, 1978, 53-55323

Int. Cl.³ C08F *4/66*

U.S. Cl. 526—65 **8 Claims**

1. In a process for polymerizing ethylene alone or ethylene in admixture with a small amount of another α-olefin or conjugated diolefin in two successive polymerization steps, the improvement comprising:

polymerizing 30 to 70 wt.% of said ethylene or ethylene mixture in the presence of hydrogen at a molar ratio of ethylene or ethylene mixture to hydrogen of 1:1–8 in the gaseous phase of the polymerization system in the first step and polymerizing the residual amount of said ethylene or ethylene mixture in the second step at an ethylene or ethylene mixture:hydrogen molar ratio of 1:0–0.3 in the gaseous phase of the polymerization system, wherein the catalyst in each of said polymerization steps comprises the combination of (1) an organoaluminum compound (C) selected from the group consisting of organometallic compounds sufficient for preparing Ziegler type catalysts and (2) a specific solid catalyst component (B) obtained by reacting (II) a titanium or vanadium halogen containing compound with a reaction product (A) obtained by reacting (I) a Grignard reagent with a silicon compound selected from the group consisting of a hydropolysiloxane having the formula:



wherein R' is a monovalent alkyl, aryl, aralkyl, alkoxy or aryloxy group, a is 0,1 or 2,b is 1, 2 or 3 and a+b≦3 and a silicon compound including the formula $R^2_nSi(OH)_{4-n}$ wherein R^2 represents a C_1–C_{18} monovalent hydrocarbon moiety and n is 1, 2 or 3, said reacting (II) being in the presence or absence of an aluminum alkoxide, an aluminum alkoxyhalide or the reaction product obtained by reacting an alkoxyaluminum compound with water.

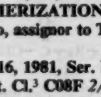
4,357,449

DISPERSION POLYMERIZATION OF CYCLOOLEFINS

Kong S. Yi, Parma, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 16, 1981, Ser. No. 321,661
Int. Cl.³ C08F 2/08
U.S. Cl. 526—74 10 Claims

1. Process for polymerizing by ring opening polymerization at least one monomer selected from monomers containing the norbornene group shown below,



said process comprising reacting said monomer(s) in the presence of a hydrocarbon diluent, a catalyst system, and a sufficient amount of a dispersant to produce a particulate polymer product comprising polymer particles dispersed in said diluent, said polymer particles being of a size that are much smaller than polymer particles prepared in absence of said dispersant, said diluent being a solvent for said monomer(s) but a nonsolvent for said polymer particles, and said dispersant being selected from unsaturated elastomers that are soluble in said diluent and have a double bond along the backbone chain or in a pendant group thereof.

4,357,450

METHOD FOR THE PRODUCTION OF HYDROCARBON RESINS

Kurt Handrick, Essen-Steele, and Georg Kölling, Essen-Bredeney, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 15, 1981, Ser. No. 254,383
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1980, 3014898
Int. Cl.³ C08F 2/00, 110/00
U.S. Cl. 526—76 6 Claims

1. Method for the production of hydrocarbon resins based upon pyrolysates through cationic polymerization of the pyrolysates in the presence of Friedel-Crafts catalysts and solvents at temperatures between −40° and +60° C., comprising the steps of pyrolysing tetralin, methyl-tetralin and/or dimethyl-tetralin at 660°–710° C. in the presence of 1–10 mol vaporous water per mol tetralin or tetralin derivative with a dwell time of 1–2 seconds; distilling the pyrolysate for freeing of high boiling portions; and polymerizing the unsaturated compounds contained in the distillate.

4,357,451

CHEMICAL DEHYDROXYLATION OF SILICA

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 151,848, May 21, 1980, Pat. No. 4,308,172. This application Aug. 28, 1981, Ser. No. 297,454
Int. Cl.³ C08F 4/02, 4/24
U.S. Cl. 526—106 13 Claims

1. A polymerization process comprising contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with a catalyst produced by (1) subjecting a silica-containing composition at an elevated temperature to a chlorinating agent, (2) subjecting the resulting chlorinated silica-containing composition to a dechlorination treatment at an elevated temperature to remove chlorine, and (3) oxidizing the thus dechlorinated composition at a temperature between 600° C. and the sintering temperature for said silica-containing composition, incorporating a chromium compound into said dechlorinated silica-containing composition under anhydrous conditions and thereafter activating the resulting catalyst at a temperature within the range of 15° C. to 870° C. for a time of at least 5 minutes.

4,357,452

PROCESS FOR POLYMERIZING PROPYLENE

Genjiro Kakogawa; Masayoshi Hasuo; Yoshinori Suga, all of Yokohama; Hisashi Kitada, Tokyo, and Yumito Uehara, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 5,471, Jan. 22, 1979, Pat. No. 4,258,161. This application Jul. 16, 1980, Ser. No. 169,453
Claims priority, application Japan, Feb. 14, 1978, 53-15758; Sep. 12, 1978, 53-111865
The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.
Int. Cl.³ C08F 4/64, 10/06
U.S. Cl. 526—139 15 Claims

1. A process for polymerizing propylene, which comprises: polymerizing propylene in the presence of a catalyst system composed of:

(A) a solid titanium trichloride-based complex which is a fine particulate solid obtained by reducing titanium tetrachloride with an organic aluminum compound and treating the reduction product with an ether or a thioether and then with titanium tetrachloride, and which is expressed by the formula:

$$TiCl_3.(AlR_p^3X_{3-p})_x.(C)_y$$

wherein R^3 is a hydrocarbon group of 1–20 carbon atoms, X is a halogen atom, p is a value within the range of $0 \leqq p \leqq 2$, C is an ether or a thioether, x is a value less than 0.15 and y is a value greater than 0.001, and

(B) an organic aluminum cocatalyst of the formula:

$$AlR_n^1Cl_{3-n'}$$

wherein R^1 is a n-propyl group or a n-hexyl group and n is a value of 1.95–2.10.

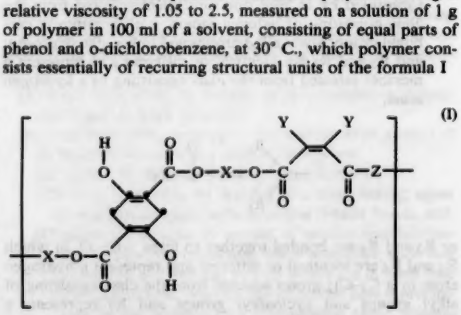
4,357,453

PHOTOCURABLE POLYMERS OBTAINED FROM SUCCINYLOSUCCINIC ACID AND MALEIC ACID DERIVATIVES, PROCESSES FOR THE PREPARATION OF THE POLYMERS, AND USE OF THE POLYMERS

Hans Batzer, Arlesheim, Switzerland, and Joel Sinnreich, Bensheim, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,324
Claims priority, application Switzerland, May 7, 1980, 3553/80
Int. Cl.³ C08G 63/02, 63/12
U.S. Cl. 526—271 9 Claims

1. An unsaturated, photo-crosslinkable polymer having a relative viscosity of 1.05 to 2.5, measured on a solution of 1 g of polymer in 100 ml of a solvent, consisting of equal parts of phenol and o-dichlorobenzene, at 30° C., which polymer consists essentially of recurring structural units of the formula I



(I)

in which X is linear or branched alkylene having 2 to 10 C

atoms or a cycloaliphatic or cycloaliphatic-aliphatic radical having up to 15 C atoms, the two Y, independently of one another, are each a hydrogen atom or methyl, and Z is —O—, —NH— or >N—CH_3.

4,357,454

BINDER

Krister Holmberg, Mölndal; Jan-Allan Y. Johansson, and Gerd E. Wallin, both of Gothenburg, all of Sweden, assignors to Eka AB, Surte, Sweden

Filed Aug. 20, 1981, Ser. No. 294,719
Claims priority, application Sweden, Sep. 2, 1980, 8006100
Int. Cl.³ C08L 97/00
U.S. Cl. 527—403 7 Claims

1. A binder of the lignin type, containing, as binder component, alkali-treated chlorolignin, alone or in combination with phenol resin or amine resin.

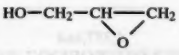
4,357,455

PROCESS FOR THE PREPARATION OF COPOLYMERS CONTAINING HYDROXYL GROUPS AND THE USE THEREOF

Josef Mondt, Königstein, and Helmut Rinno, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 21, 1981, Ser. No. 265,793
Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019959
Int. Cl.³ C08G 18/62; C08F 8/14, 220/28, 246/00
U.S. Cl. 528—73 11 Claims

1. Process for the manufacture of copolymers soluble in organic solvents and containing hydroxyl groups which comprises polymerizing in the presence of a polymerization catalyst (a) at least one α,β-olefinically unsaturated carboxylic acid as component (a) with (b) at least one olefinically unsaturated copolymerizable monomer as component (b) and esterifying with component (c) at least one epoxy compound selected from the group consisting of glycidol of the formula



and mixtures thereof with glycidyl esters having from 12 to 19 carbon atoms and being derived from saturated fatty acids in an amount such that the amount of epoxy equivalents contained in the glycidyl esters is at most double as high as that contained in the glycidol, the total amount of the epoxy groups being at least equivalent to those of the carboxyl groups and the polymerization and the esterification being carried out at an elevated temperature in the range from 80° to 150° C.

4,357,456

LOW VISCOSITY VINYL ESTER RESINS

John A. Lopez, and Christopher W. Uzelmeier, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 28, 1981, Ser. No. 297,293
Int. Cl.³ C08G 59/16
U.S. Cl. 528—111.5 10 Claims

1. A vinyl ester resin composition exhibiting reduced viscosity prepared by first reacting an epoxy compound containing at least one vicinal epoxy group in the molecule with an ethylenically unsaturated carboxylic acid and then esterifying at least 90% of the pendant hydroxyl groups of said reaction product with a fatty or rosin acid.

4,357,457

USEFUL SOLUTIONS OF THE TETRAMETHYLOL DERIVATIVE OF 4,4'ISO-PROPYLIDENEDIPHENOL

Thomas G. Harris, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 178,722, Aug. 18, 1980. This application Jan. 13, 1982, Ser. No. 339,123
Int. Cl.³ C08G 8/04, 14/04
U.S. Cl. 528—159 2 Claims

1. A solution comprising, in relative proportions, 100 parts by weight of the tetramethylol derivative of 4,4'isopropylidenediphenol, about 15 to about 35 parts by weight water and about 5 to about 30 parts by weight of ethylene carbonate or propylene carbonate, with the total parts by weight of water and carbonate ranging from about 40 to about 45.

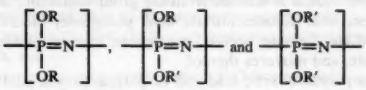
4,357,458

PROCESS FOR PREPARING POLYPHOSPHAZENE POLYMERS CONTAINING FLUOROALKOXY AND/OR ARYLOXY SUBSTITUENTS

Thomas A. Antkowiak, Rittman, and David J. Serbin, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 3, 1980, Ser. No. 203,097
Int. Cl.³ C08G 79/04
U.S. Cl. 528—167 11 Claims

1. A method of preparing polyphosphazene polymers containing from 20 to 50,000 units represented by the formulae:



wherein R and R' are the same or different and are organic radicals selected from the group consisting of fluoroalkyl groups and substituted or unsubstituted aryl groups, said method comprising the steps of:

(a) reacting a fluoroaliphatic alcohol or substituted or unsubstituted aromatic alcohol or mixture of said alcohols with sodium hydroxide in an organic solvent or mixture of organic solvents which will form an azeotrope with water produced by the reaction;

(b) removing water produced by the reaction of said alcohols or mixture of alcohols and said sodium hydroxide from the reaction zone by azeotropic distillation thereby producing substantially dry sodium salts of said alcohols; and

(c) reacting said substantially dry sodium salts of said alcohols with a linear polydichlorophosphazene polymer represented by the formula $(NPCl_2)_n$, in which n is from 20 to 50,000.

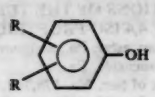
4,357,459

RESINS BASED ON α-METHYL STYRENE, STYRENE AND A PHENOL

Yves Runavot, St. Maur des Fosses; Georges Billault, Saint Ouen, and Jacques Salvetat, Le Vesinet, all of France, assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Aug. 25, 1980, Ser. No. 191,466
Claims priority, application Netherlands, Aug. 31, 1979, 7906569; Mar. 14, 1980, 8001536
Int. Cl.³ C08G 65/38; C08F 12/24; C09J 3/00
U.S. Cl. 528—205 2 Claims

1. A resin having an average molecular weight of 400 to 2,000, which is useful in adhesives, based on a α-methyl styrene, styrene and a phenol as constituents, characterized in that the weight percentages of α-methyl styrene, styrene and a phenol with a structural formula



in which R is hydrogen or a C_1–C_{12} alkyl group, which compounds are substantially the sole constituents, range from 25 to 63, from 35 to 73 and from 2 to 15 respectively.

4,357,460

PROCESS FOR THE PRODUCTION OF POLYESTER SILICATE RESINOUS PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 122,015, Feb. 19, 1980, which is a continuation-in-part of Ser. No. 10,061, Feb. 7, 1979, Pat. No. 4,200,697, which is a continuation-in-part of Ser. No. 794,915, May 9, 1977, Pat. No. 4,125,498, which is a continuation-in-part of Ser. No. 653,727, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 562,201, Apr. 14, 1975, abandoned. This application Apr. 22, 1981, Ser. No. 256,317

Int. Cl.³ C08G 63/00

U.S. Cl. 528—271 17 Claims

1. The process for the production of polyester silicate resinous product by mixing and reacting the following components:

(A) an alkali metal silicate, 1 to 10 parts by weight;

(B) an organic monohydroxy compound having a substituent which will split off during the reaction and the substituent radical is selected from the group consisting of halogen, acid sulfate, nitrate, acid phosphate, bicarbonate, sulfate, formate, acetate, propionate, laurate, oleate, stearate, and mixtures thereof,

(C) a polycarboxylic acid and/or polycarboxylic acid anhydride, 10 to 30 parts by weight.

4,357,461

POLYESTER STABILIZATION AND COMPOSITION

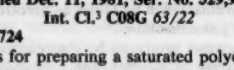
Santos W. Go, and Dennis J. Burzynski, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 11, 1981, Ser. No. 329,979

Int. Cl.³ C08G 63/22

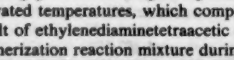
U.S. Cl. 524—724 18 Claims

1. A process for preparing a saturated polyester resin containing



groups and having good stability against generation of acetaldehyde at elevated temperatures, which comprises having an alkali metal salt of ethylenediaminetetraacetic acid present in the melt polymerization reaction mixture during formation of such polyester, in an amount up to 0.5 mol percent based on the saturated di- and polycarboxylic acid moieties entering into the polymerization reaction.

10. A saturated polyester having good stability against thermal degradation to yield acetaldehyde which comprises a saturated polyester having



groups in its backbone to which has been added an alkali metal salt of ethylenediaminetetraacetic acid during melt polymerization, in an amount of up to 0.5 mol percent of the combined saturated carboxylic acids present in said polyester.

4,357,462

PROCESS FOR PRODUCING LACTONE HIGH POLYMERS

Masayoshi Kubo, and Kimio Inoue, both of Ohimachi, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 16, 1981, Ser. No. 244,392

Claims priority, application Japan, Apr. 23, 1980, 55-53837

Int. Cl.³ C08G 63/10

U.S. Cl. 528—357 15 Claims

1. A process for preparing a rigid polymer having a number-average molecular weight of higher than 20,000, which comprises the steps of polymerizing a polymerizable lactone monomer having a water content of less than 0.1 percent by weight, in the presence of a catalytically effective amount of a catalyst selected from the group consisting of stannous chloride, stannous chloride dihydrate, stannous bromide, stannous iodide, titanium trichloride, titanium tetrachloride, ammonium molybdate, zirconium nitrate, zirconium oxychloride and zirconyl carboxylates, until said polymer is formed; and then recovering said polymer.

4,357,463

PROCESS FOR THE PRODUCTION OF POLYESTER SILICATE RESINOUS PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 122,015, Feb. 19, 1980, which is a continuation-in-part of Ser. No. 10,061, Feb. 7, 1979, Pat. No. 4,200,697, which is a continuation-in-part of Ser. No. 794,915, May 9, 1977, Pat. No. 4,125,498, which is a continuation-in-part of Ser. No. 653,727, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 562,201, Apr. 14, 1975, abandoned. This application Dec. 3, 1981, Ser. No. 326,842

Int. Cl.³ C08G 63/00

U.S. Cl. 528—366 7 Claims

1. The process for the production of polyester silicate resinous products containing an oxidated silicon compound by mixing and reacting the following components:

(a) an oxidated silicon compound, 1 to 50 parts by weight;

(b) an organic epoxide compound, 10 to 50 parts by weight;

(c) an organic polycarboxyl compound selected from the group consisting of polycarboxylic acid, polycarboxylic acid anhydride and mixtures thereof, 10 to 50 parts by weight;

(d) a Lewis acid, 0.5 to 5 parts by weight.

4,357,464

REMOVAL OF 2-ISOPROPENYL-2-OXAZOLINE MONOMER

Donald A. Tomalia, and Timothy J. Adaway, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 15, 1981, Ser. No. 254,246

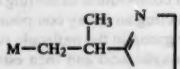
Int. Cl.³ C08F 6/10

U.S. Cl. 528—481 8 Claims

1. A process for reducing the level of 2-isopropenyl-2-oxazoline present in a polymer comprising the steps of:

(a) contacting at reactive conditions in a liquid medium the polymer containing the 2-isopropenyl-2-oxazoline with a protic acid, H-X, so as to produce the corresponding 2-isopropenyl-2-oxazolinium salt of the conjugate base of the acid; and

(b) contacting at reactive conditions the 2-isopropenyl-2-oxazolinium salt with a nucleophilic compound, H-M having a nucleophilic constant of greater than 5, so as to prepare a compound corresponding to formula I or formula II



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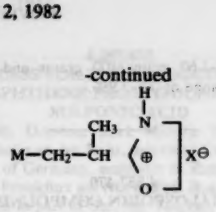


II

wherein M is the conjugate base of the nucleophilic compound H-M and X in Formula II is an anion derived from the protic acid.

4,357,465

3',4'-DIEDEOXYKANAMYCIN B DERIVATIVES

Hamao Umezawa; Sumio Umezawa; Shigeo Seki; Shunzo Fukatsu, all of Tokyo, and Shuntaro Yasuda, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Division of Ser. No. 880,401, Feb. 23, 1978, Pat. No. 4,195,170, which is a continuation-in-part of Ser. No. 745,016, Nov. 26, 1976, abandoned. This application Sep. 15, 1980, Ser. No. 187,014

Claims priority, application Japan, Dec. 9, 1975, 50-145930; Dec. 10, 1975, 50-146345

Int. Cl.³ A61K *31/71*; C07H *15/22*

U.S. Cl. 536—13.8 8 Claims

4. 4'-deoxy-4'-iodo-penta-N-t-butoxycarbonyl-4'',6''-O-cyclohexlidene-2''-O-benzoyl-kanamycin B.

4,357,466

PROCESSES FOR THE PRODUCTION OF 3'-DEOXYKANAMYCIN A AND INTERMEDIATES

Hamao Umezawa; Sumio Umezawa, both of Tokyo; Tsutomu Tsuchiya, Yokohama, and Tomo Jikihara, Kawasaki, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Oct. 20, 1980, Ser. No. 198,612

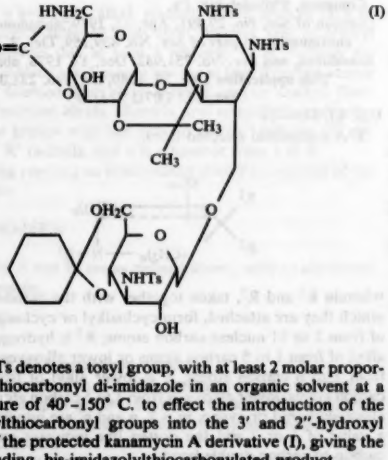
Claims priority, application Japan, Oct. 31, 1979, 54-139798

Int. Cl.³ A61K *31/71*; C07H *15/22*

U.S. Cl. 536—13.8 5 Claims

1. A process for the production of 3'-deoxykanamycin A, which comprises the steps of:

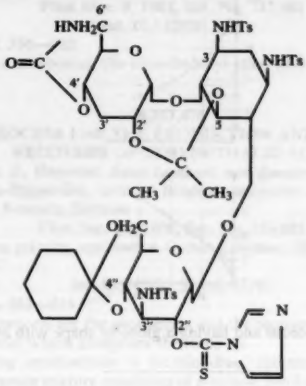
(a) reacting a protected kanamycin A derivative of the formula



(I)

wherein Ts denotes a tosyl group, with at least 2 molar proportions of thiocarbonyl di-imidazole in an organic solvent at a temperature of 40°–150° C. to effect the introduction of the imidazolylthiocarbonyl groups into the 3' and 2''-hydroxyl groups of the protected kanamycin A derivative (I), giving the corresponding, bis-imidazolylthiocarbonylated product,

(b) removing the 3'-imidazolyl-thiocarbonyloxy group from the bis-imidazolylthiocarbonylated product by reacting with tri-butyltin hydride in an organic solvent at a temperature of 40°–150° C. to produce the 3'-deoxygenated product of the formula



(II)

wherein Ts is as defined above,

(c) removing the 2''-O-imidazolylthiocarbonyl group from the above 3'-deoxygenated product by reacting with aqueous ammonia,

(d) removing the N-tosyl groups by reacting with an alkali metal or alkaline earth metal in liquid ammonia,

(e) opening the 4',6'-cyclic carbamate ring by basic hydrolysis, and

(f) removing concurrently the 5,2'-O-isopropylidene group and the 4'',6''-O-cyclohexylidene group by acidic hydrolysis, to produce the desired 3'-deoxykanamycin A.

4,357,467

DEPOLYMERIZED CELLULOSIC MATERIAL WITH LOW CRYSTALLINITY OBTAINED FROM CELLULOSIC FIBERS AND PROCESS FOR ITS MANUFACTURE

Jean-Pierre Sachetto, St-Julien en Genevois; Jean-Pierre Michel, Ferney-Voltaire, both of France; Sergio Cuccolo, Geneva, Switzerland, and Alain Regnault, Ferney-Voltaire, France, assignors to Battelle Memorial Institute, Columbus, Ohio

PCT No. PCT/CH79/00138, § 371 Date Jun. 20, 1980, § 102(e) Date Jun. 20, 1980, PCT Pub. No. WO80/00843, PCT Pub. Date May 1, 1980

PCT Filed Oct. 23, 1979, Ser. No. 196,042

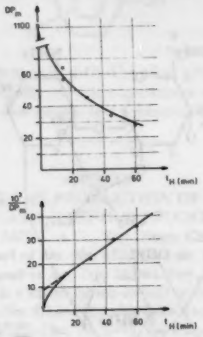
Claims priority, application Switzerland, Oct. 24, 1978, 10963/78

Int. Cl.³ C08G *18/08*

U.S. Cl. 536—56 14 Claims

1. Depolymerized cellulose material having a degree of crystallinity of at least 17% but not exceeding 70%, an average degree of polymerization DP_m corresponding to 10 to 200

units of anhydroglucose and being in powdered form with a low moisture content, the particles of the powdered material



being microporous and having a globular shape with rounded angles.

4,357,468

SORBENTS OF CELLULOSE BASIS CAPABLE OF FORMING INCLUSION COMPLEXES AND A PROCESS FOR THE PREPARATION THEREOF

Jozsef Szejtli; Bela Zsadon; Eva Fenyvesi; nee Otta Horvath, and Ferenc Tüdös, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

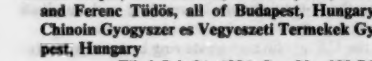
Filed Jul. 31, 1981, Ser. No. 288,764

Claims priority, application Hungary, Aug. 7, 1980, 1960/80

Int. Cl.³ C08B *15/00, 37/16*

U.S. Cl. 536—56 **15 Claims**

1. A cellulose derivative containing structural units of the formula (I),



(I)

wherein

Cell is a group derived by removing m hydroxy groups from the glucose unit of the cellulose chain,

m is an integer of 1 to 3,

CD is a group derived by removing one hydroxy group from the α, β or γ-cyclodextrin molecule,

n is an integer of 1 to 5, and

p stands for 0 or 1 and can vary even within a single chain.

4,357,469

CARRIER BASE MATERIAL FOR PROLONGED RELEASE THERAPEUTIC COMPOSITIONS

Joseph M. Schor, Locust Valley, N.Y., assignor to Forest Laboratories, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 127,433, Mar. 3, 1980, abandoned, which is a division of Ser. No. 48,344, Jun. 14, 1979, Pat. No. 4,226,849. This application Jun. 29, 1981, Ser. No. 278,568

Int. Cl.³ A61K *47/00*; C08B *11/20, 11/193*; C08L *1/26*

U.S. Cl. 536—91 **3 Claims**

1. A carrier base material adapted to be combined with a therapeutically active medicament and shaped and compressed to form a sustained release therapeutic composition having a longlasting, slow and regular incremental release of the medicament upon administration, the carrier base material being hydroxypropylmethylcellulose or a mixture of hydroxypropylmethylcellulose and up to 30% ethylcellulose or 30% sodium carboxymethylcellulose or both, and wherein the carrier base material has been subjected to hydrolysis and oxidation successively or concurrently until the carbonyl content ranges from 0.2–3.0 grams/100 grams, the carboxyl content ranges from 0.60–2.60 grams/100 grams and the moisture content is in the range of 0.5–3.9%.

4,357,470

CEPHALOSPORIN COMPOUNDS

Yoshiaki Watanabe, Tokyo; Chihiro Yokoo, Saitama; Toshifumi Asaka, Saitama; Akira Onodera, Saitama; Kaoru Sota, Saitama, and Jiro Sawada, Tokyo, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

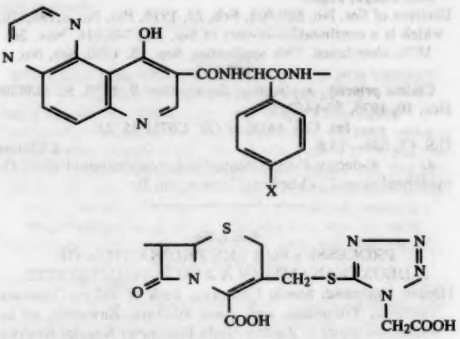
Filed Apr. 23, 1981, Ser. No. 256,780

Claims priority, application Japan, May 10, 1980, 55/61911

Int. Cl.³ C07D *501/56*

U.S. Cl. 544—27 **3 Claims**

1. Cephalosporin compound having the general formula



wherein X represents a hydrogen atom or hydroxy group, and the non-toxic pharmacologically acceptable salts thereof.

4,357,471

AZASPIRO COMPOUNDS

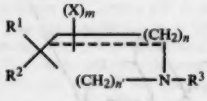
Joel R. Smolanoff, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 29,491, Apr. 12, 1979, abandoned, and a continuation-in-part of Ser. No. 839,159, Oct. 3, 1977, abandoned, and Ser. No. 751,932, Dec. 17, 1976, abandoned. This application Dec. 29, 1980, Ser. No. 221,089

Int. Cl.³ C07D *211/74*

U.S. Cl. 546—16 **2 Claims**

1. A compound selected from:



wherein R^1 and R^2, taken together with the carbon atom to which they are attached, form cycloalkyl or cycloalkoxyalkyl of from 5 to 11 nuclear carbon atoms; R^3 is hydrogen, lower alkyl of from 1 to 5 carbon atoms or lower alkoxycarbonyl of from 2 to 6 carbon atoms; X is lower alkyl of from 1 to 5 carbon atoms, lower alkoxy of from 1 to 5 carbon atoms, lower alkoxycarbonyl or cyano; m is 2, n and n' are integers having a value of 1 or 2 and the dotted line indicates an optional carbon to carbon double bond.

2. The compound of claim 1 named 1-cyano-2-(2'-hydroxyethyl)-6-methyl-2-azaspiro-[5.5]-undec-8-ene.

4,357,472

PROCESS FOR THE PRODUCTION OF THIONAPHTHENE FROM THIONAPHTHENE SULFONIC ACID

Georg Grigoleit, Dorsten; Kurt Matern, Duisburg; Helmut Köhler, Mülheim an der Ruhr, and Gerd Collin, Duisburg, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 946,892, Sep. 28, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,172

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744066

Int. Cl.³ C07D *333/54*

U.S. Cl. 549—49 11 Claims

1. A process for the production of thionaphthene by dissociation of thionaphthene sulfonic acid with water which comprises maintaining the density of the reaction mixture substantially constant during the entire duration of the dissociation reaction by the controlled addition of water to the reaction mixture, maintaining the thionaphthene formed within the reaction mixture by not removing said thionaphthene therefrom by azeotropic distillation, and separating thionaphthene from the reaction mixture at completion of said dissociation.

4,357,473

METHOD FOR PREPARING ALKOXYSILANE CLUSTER COMPOUNDS; RESULTING NOVEL COMPOUNDS; AND THEIR USE AS FUNCTIONAL FLUIDS

Karl O. Knollmueller, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 1, 1979, Ser. No. 90,376

Int. Cl.³ C07F *7/04, 7/18;* C09K *5/00*

U.S. Cl. 556—416 19 Claims

1. A process for preparing an alkoxysilane cluster compound of the formula:

$$RSi[SiO_4]_3[R']_{9-n}[R'']_n$$

wherein R is hydrogen, alkyl, alkenyl, aryl or aralkyl; each R′ is independently selected from alkyl, alkenyl, aryl or aralkyl with the proviso that at least a majority of R′ radicals are sterically hindered alkyl groups having at least 3 carbon atoms; each R″ is selected from alkyl, alkenyl, aryl or aralkyl, functionally substituted alkyls, alkenyls, aryl or aralkyls; and polyoxyalkylene groups with the proviso that R″ radicals are different than R′ radicals; and n is a number from 1 to 9;

comprising reacting an alkoxysilane cluster compound of the formula:

$$RSi[SiO_4]_3[R']_9$$

wherein R and R′ are as defined above, with an alcohol of the formula:

$$R''OH$$

wherein R″ is as defined above;

in the presence of an effective amount of acidic catalyst;

employing at least about 0.8 n moles of said alcohol per one mole of said alkoxysilane cluster compound wherein n is defined above;

and said reaction being carried out at about 60° C. to about 250° C.

4,357,474

INSECT PHEROMONE

Robert L. Carney, Palo Alto, and Alfred S. T. Lui, San Francisco, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Mar. 9, 1981, Ser. No. 242,081

Int. Cl.³ C07F *7/18*

U.S. Cl. 556—482 2 Claims

1. The compound, the trimethylsilyl ether of 9-decyn-1-ol.

4,357,475

PROCESS FOR THE PRODUCTION AND THE RECOVERY OF TEREPHTHALIC ACID

Jacques D. Hanotier, Saint-Lambert, and Jacques F. Dauby, Groot-Bijgaarden, both of Belgium, assignors to Labofina, S.A., Brussels, Belgium

Filed Sep. 11, 1980, Ser. No. 186,101

Claims priority, application United Kingdom, Mar. 21, 1980, 8009682

Int. Cl.³ C07C *51/16, 51/42*

U.S. Cl. 562—414 7 Claims

1. A process for the production and the recovery of terephthalic acid which comprises the steps of:

feeding continuously a bromine-free, substantially liquid aqueous mixture consisting of p-xylene, p-toluic acid and a solvent consisting essentially of water into an oxidation reactor where it is oxidized with an oxygen-containing gas at a temperature of from 140° C. to 220° C. in the presence of a heavy-metal catalyst,

feeding the resultant reaction mixture consisting of terephthalic acid crystals in suspension in an aqueous solution comprising unreacted p-xylene, intermediate oxidation products thereof, the heavy-metal catalyst and water in the upper part of a sedimentation column wherein terephthalic acid crystals are separated by gravity from the other components of the reaction mixture and are washed with a countercurrent of water introduced near the bottom of said column, the temperature in the sedimentation column being maintained at a value higher than the minimum value T_M given by the equation $T_M = 144 + 0.225\ T_R$, wherein T_r is the temperature of the reaction mixture in the oxidation reactor, and not higher than 240° C., and

recovering crude terephthalic acid from the bottom of the sedimentation column as a slurry in water substantially free from intermediate oxidation products and heavy metal catalyst.

4,357,476

NONYLAMINES

Dieter Reinchr, Wittlingen, Fed. Rep. of Germany; Bernard Hugelin, Gaillard, France, and Eduard Troxler, Basel, Switzerland, assignors to Ciba Geigy Corporation, N.Y., New York, N.Y.

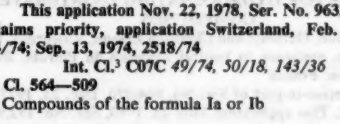
Division of Ser. No. 775,654, Mar. 3, 1977, Pat. No. 4,139,560, which is a division of Ser. No. 551,481, Feb. 20, 1975, abandoned. This application Nov. 22, 1978, Ser. No. 963,110

Claims priority, application Switzerland, Feb. 22, 1974, 2544/74; Sep. 13, 1974, 2518/74

Int. Cl.³ C07C *49/74, 50/18, 143/36*

U.S. Cl. 564—509 5 Claims

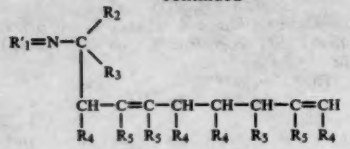
1. Compounds of the formula Ia or Ib



(Ia)

or

-continued



(Ib)

wherein R_1 represents an alkyl or cycloalkyl group, R_1' represents an alkylidene or cycloalkylidene group corresponding to R_1, R_2 represents hydrogen or an alkyl group and R_3 represents hydrogen or an alkyl group, or R_2 and R_3 conjointly form a 4-membered to 11-membered alkylene, and groups according to the definition which are represented by R_1, R_1', R_2 and R_3 can be substituted, but are free from proton-active groups, azide groups and/or groups containing multiple bonds, and R_4 and R_5 independently of one another represent hydrogen or an alkyl group having 1–4 carbon atoms which contains at least one hydrogen atom on the linking C atom, the C number of the substituents R_4 and R_5 on four successive chain members being not more than 5.

4,357,477

PROCESS FOR PREPARING ETHYLENE GLYCOL MONOALKYL ETHERS

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,192
Int. Cl.³ C07C *41/01*
U.S. Cl. 568—678 24 Claims

1. A process for preparing ethylene glycol monoalkyl ethers which comprises reacting hydrogen, carbon monoxide and a material selected from the group consisting of:

(a) formaldehyde and an alcohol of the formula:

ROH,

wherein R is alkyl of from 1 to 10 carbon atoms, and

(b) an acetal of the formula:

$(R'O)_2CH_2$

wherein R is alkyl of from 1 to 10 carbon atoms, in the presence of a catalyst comprising a cobalt-containing compound and a promoter selected from the group consisting of a tin-containing compound and a germanium-containing compound, at superatmospheric pressures of about 500 psig or greater and at a temperature of about 50° to about 300° C. until substantially formation of the said ethylene glycol monoalkyl ether has been achieved and recovering the said ether from the reaction mixture.

4,357,478

PROCESS FOR HYDROGENATING UNSATURATED COMPOUNDS

Gerard Hillion, Herblay, and Christian Lassau, Villepreux, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 864,070, Dec. 23, 1977, abandoned. This application May 23, 1980, Ser. No. 152,961
Claims priority, application France, Dec. 24, 1976, 76 39218
Int. Cl.³ C07C *29/19*; B01J *31/02*
U.S. Cl. 568—816 13 Claims

1. In a process for hydrogenating a hydrogenatable unsatuated organic compound having carbon-carbon, carbon-oxygen, carbon-nitrogen or nitrogen-oxygen multiple bonds, in substantially homogeneous, organic liquid phase, wherein said compound is hydrogenated with hydrogen, in the presence of a hydrogenation catalyst which is substantially soluble in said organic liquid phase,

the improvement which comprises using as said catalyst the product obtained by reacting at least one tri-hydrocarbyl aluminum reducing agent with (a) at least one carboxylate of a transition metal and (b) at least one organic carboxylic acid whose pK_a in water at 25° C. is lower than 7.

10. A catalyst for use in the process of claim 1, which consists of the reaction product of at least one tri-hydrocarbyl aluminum with (a) a transition metal carboxylate and (b) an organic carboxylic acid whose pK_a in water at 25° C. is lower than 7.

4,357,479

PRODUCTION OF ALCOHOLS

Tamotsu Imai, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 134,032, Mar. 26, 1980, abandoned. This application Oct. 5, 1981, Ser. No. 308,705
Int. Cl.³ C07C *29/04*
U.S. Cl. 568—899 10 Claims

1. A process for the production of an alcohol in a vaporliquid mixed phase environment which comprises hydrating a vaporous olefinc hydrocarbon containing from 2 to 4 carbon atoms with liquid water at hydration conditions which include a temperature in the range of from about 100° to about 300° C. and a pressure in the range of from about 1 to about 300 atmospheres, wherein said hydration conditions are selected to insure that said water remains in a liquid phase in the presence of a liquid sulfur-containing acid catalyst and a co-catalyst consisting essentially of a solid, porous, hydrophobic or hydrophilic carbon and recovering the resultant alcohol.

4,357,480

PROCESS FOR THE PRODUCTION OF ETHANOL BY THE LIQUID PHASE HYDROCARBONYLATION OF METHANOL

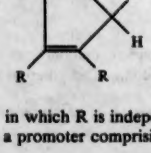
Michael T. Barlow, Addlestone, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 11, 1981, Ser. No. 242,488
Claims priority, application United Kingdom, Mar. 18, 1980, 8009014
Int. Cl.³ C07C *29/32*
U.S. Cl. 568—902 10 Claims

1. A process for the production of a product comprising ethanol which process comprises reacting at elevated temperature and pressure and in the liquid phase methanol with hydrogen and carbon monoxide in the presence of an inert, particulate solid comprising a high surface area form of silica, alumina, silica/alumina or carbon, a methanol soluble catalyst comprising either:

(i) cobalt as the sole catalytic metal entity added either as cobalt carbonyl or bis(triphenylphosphine)iminium tetracarbonylcobaltate or a cobalt source capable of forming a carbonyl and/or a carbonyl hydride complex under the prevailing reaction conditions, or

(ii) a metal complex of a metal of Group VIII of the Periodic Table excluding iron, palladium and platinum as the sole catalytic metal entity in which the ligand is derived from cyclopentadiene or a substituted cyclopentadiene of formula:



(I)

in which R is independently hydrogen, methyl or ethyl, and a promoter comprising either an iodide or a bromide.

4,357,481

ADAMANTANE CATALYZED PARAFFIN-OLEFIN ALKYLATION

George M. Kramer, Berkeley Heights, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 31, 1981, Ser. No. 298,119
Int. Cl.[3] C07C *2/58, 2/60, 2/62*
U.S. Cl. 585—724 12 Claims

1. An alkylation process comprising contacting a C_4–C_6 linear or branched paraffinic compound capable of forming a carbonium ion under strong acid conditions, with a C_2–C_5 olefin, in the presence of a strong acid system and an adamantane hydrocarbon containing at least one unsubstituted bridgehead position, at a temperature of about −100° to 150° C., thereby producing a C_6–C_{11} branched paraffinic hydrocarbon.

4. The process of claim 1 wherein said acid system contains an acid component selected from $AlBr_3$, $AlCl_3$, $GaCl_3$, TaF_5, AsF_5, BF_3, HF, HCl, HBr, H_2SO_4, HSO_3F, CF_3SO_3H, and mixtures thereof.

4,357,482

AMINOALKYL ADAMANTANE CATALYZED PARAFFIN-OLEFIN ALKYLATION

George M. Kramer, Berkeley Heights, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 31, 1981, Ser. No. 298,120
Int. Cl.[3] C07C *2/58*
U.S. Cl. 585—724 14 Claims

1. An alkylation process comprising contacting a C_4–C_6 linear or branched paraffinic compound, capable of forming a carbonium ion under strong acid conditions, with a C_2–C_5 olefin in the presence of a strong acid system and an aminoalkyladamantane hydrocarbon containing at least one unsubstituted bridgehead position, at a temperature of about −100° to 150° C., thereby producing a C_6–C_{11} branched paraffinic hydrocarbon.

4. The process of claim 1 wherein said acid system contains an acid component selected from $AlBr_3$, $AlCl_3$, $GaCl_3$, TaF_5, AsF_5, BF_3, HF, HBr, HCl, H_2SO_4, HSO_3F, CF_3SO_3H, and mixtures thereof.

4,357,483

AMINOALKYLADAMANTANE CATALYZED ARAFFIN ISOMERIZATION

George M. Kramer, Berkeley Heights, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 31, 1981, Ser. No. 298,117
Int. Cl.[3] C07C *5/13*
U.S. Cl. 585—740 14 Claims

1. An isomerization process comprising contacting a C_4–C_6 paraffinic hydrocarbon with a strong acid system in the presence of an aminoalkyladamantane containing at least one unsubstituted bridgehead position, at a temperature of about −100° to 150° C., thereby producing a branched isomer of said paraffinic hydrocarbon.

3. The process of claim 1 wherein said acid system contains an acid component selected from $AlCl_3$, $AlBr_3$, $GaCl_3$, TaF_5, SbF_5, AsF_5, BF_3, HF, HBr, HCl, H_2SO_4, HSO_3F, CF_3SO_3H, and mixtures thereof.

4,357,484

ADAMANTANE CATALYZED PARAFFIN ISOMERIZATION

George M. Kramer, Berkeley Heights, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 31, 1981, Ser. No. 298,118
Int. Cl.[3] C07C *5/13*
U.S. Cl. 585—740 13 Claims

1. An isomerization process comprising contacting a C_4–C_6 non-cyclic paraffinic hydrocarbon with a strong acid system in the presence of an adamantane hydrocarbon containing at least one unsubstituted bridgehead position, at a temperature of about −100° to 150° C., thereby producing a branched isomer of said paraffinic hydrocarbon.

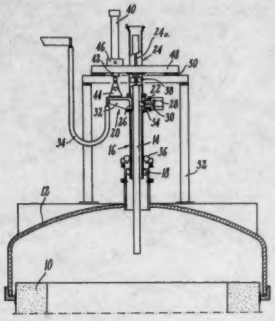
3. The process of claim 1 wherein said acid system contains an acid component selected from $AlCl_3$, $AlBr_3$, $GaCl_3$, TaF_5, SbF_5, AsF_5, BF_3, HBr, HF, HCl, H_2SO_4, HSO_3F, CF_3SO_3H, and mixtures thereof.

4,357,485

LADLE STEEL TREATMENT SYSTEM INCLUDING THREE-PART ELECTRODE CASING

Gabriel Lamarque, Paris, France, assignor to Heurtey Metallurgie, Paris, France

Filed May 29, 1980, Ser. No. 154,140
Claims priority, application France, Jun. 6, 1979, 79 14396
Int. Cl.³ H05B *7/102*
U.S. Cl. 373—95 8 Claims



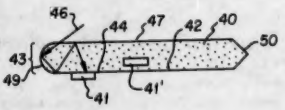
1. A steel treatment system comprising:
a ladle adapted to contain steel to be treated and having a cover;
a heating electrode mounted to extend through an opening in said cover;
a casing surrounding said electrode and including a lower section, an intermediate section and an upper section;
seal means, mounted on said cover about said opening, for forming a seal with said lower section of said casing and thereby for fluid-tightly isolating said electrode from the surrounding atmosphere;
clamp means, mounted on said intermediate section of said casing and extending therethrough, for clamping said electrode and for fixing the relative axial position thereof with respect to said casing;
actuator means, fixedly supported at a level above said clamp means and operatively connected to said casing, for moving said casing and said electrode downwardly such that new length portions of said electrode may be passed through said opening into said ladle; and
first guide means acting on said lower section of said casing and second guide means acting on said upper section of said casing for ensuring axial movement of said casing and said electrode.

4,357,486

LUMINESCENT SOLAR COLLECTOR

Harry R. Blieden, Los Angeles, and John W. Yerkes, Granada Hills, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 16, 1978, Ser. No. 887,110
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—247 14 Claims



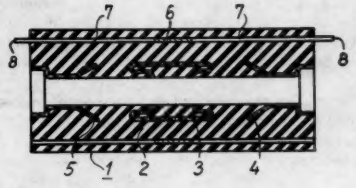
1. A photovoltaic array comprising a luminescent member having at least one pair of opposed essentially parallel sides, each of said sides extending over a large area and being joined by a thin edge face, the area of said large area sides being substantially greater than the area of said edge face, at least part of said edge face being contoured so as to have an internally reflective configuration, and at least one photovoltaic means carried by and interfacing with at least one of said large area sides.

4,357,487

CABLE FITTING WITH SLOTTED METALLIC HOUSING

Lothar Goehlich, and Jürgen Haug, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,059
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939933
Int. Cl.³ H02G *15/184*
U.S. Cl. 174—73 R 17 Claims



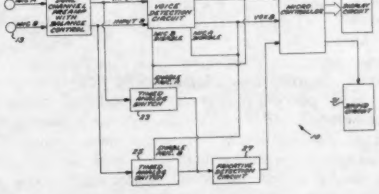
1. In a fitting for plastic insulated, shielded electric cables, especially medium and high voltage cables, including an elastic prefabricated insulating body having an outer tubular metallic housing and a hole extending along the axis of the insulating body for receiving at least one end of an electric cable, the improvement comprising, the outer housing being made of sheet metal and having at least one slot therein extending in the direction of the axis of said housing.

4,357,488

VOICE DISCRIMINATING SYSTEM

Mark S. Knighton, Los Angeles; Charles H. Fuller, Torrance; Anson Sims, Granada Hills; Ashley G. Howden, Los Angeles; L. C. James Kingsbury, Fountain Valley, and Lawrence T. Jones, Playa Del Rey, all of Calif., assignors to California R & D Center, Culver City, Calif.

Filed Jan. 4, 1980, Ser. No. 109,596
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SC 9 Claims



1. A voice discriminating system responsive to sound inputs, comprising:
first and second transducing and amplifying means responsive to spoken sounds for providing respective first and second output signals representative of the respective sound inputs provided to said first and second transducing means;
first and second low-pass filtering means respectively responsive to said first and second output signals for respectively providing first and second low-pass outputs repre-

sentative of the low frequency components in said first and second outputs;

first and second peak detecting and integrating means responsive to said first and second low-pass outputs for respectively providing first and second envelope outputs as a function of said first and second low-pass outputs;

means for comparing said first and second envelope outputs to provide a comparison output signal indicative of which envelope signal is larger in amplitude than the other envelope signal;

means responsive to said comparison output for preventing the peak detecting and integrating means associated with the envelope signal of lower amplitude from providing an envelope signal;

frequency detecting means responsive to said comparison output for sampling the output signal from the one of said first and second transducing and sampling means associated with the envelope signal of larger amplitude and for providing an output indicative of the presence of predetermined high frequency components in said output signal; and

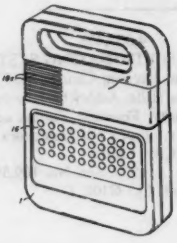
controller means responsive to said comparison means output and said frequency detecting means for providing an output as a function of said comparison means output and said frequency detecting means output.

4,357,489

LOW VOLTAGE SPEECH SYNTHESIS SYSTEM WITH PULSE WIDTH DIGITAL-TO-ANALOG CONVERTER

Alva E. Henderson, and Gene A. Frantz, both of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1980, Ser. No. 118,138
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SM **2 Claims**



1. A low voltage speech synthesis system comprising:

memory means for storing a plurality of digital speech values including digital speech values representative of digital filter coefficients;

complementary metal-insulator-semiconductor integrated circuit controller means for controlling the selective accessing of portions of said plurality of digital speech values including said digital speech values representative of digital filter coefficients from said memory means;

complementary metal-insulator-semiconductor integrated circuit digital filter speech synthesizer means coupled to said memory means and responsive to said selectively accessed digital speech values for generating digital speech signals representative of human speech;

complementary metal-insulator-semiconductor integrated circuit pulse width modulated digital-to-analog converter means coupled to said digital filter speech synthesizer means for converting said digital speech signals representative of human speech into analog signals; and

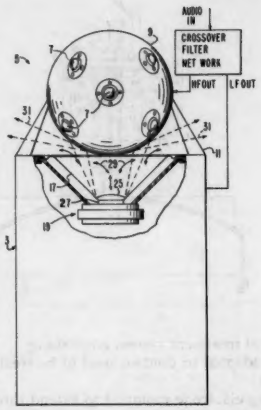
audio means coupled to said digital-to-analog converter means for converting said analog signals into audible sound.

4,357,490

HIGH FIDELITY LOUDSPEAKER SYSTEM FOR AURALLY SIMULATING WIDE FREQUENCY RANGE POINT SOURCE OF SOUND

Baron C. Dickey, 982 Yorktown Dr., Sunnyvale, Calif. 94087

Filed Jul. 18, 1980, Ser. No. 169,990
Int. Cl.³ H04R *1/20*
U.S. Cl. 179—1 E **9 Claims**



1. A high accuracy loudspeaker system for transducing an electrical signal containing frequencies located within a spectrum extending generally over the full range of audible frequencies into a sound field which closely approximates the sound field generated by a wide-frequency-range point source of sound, comprising:

lower frequency reproducer means for reproducing and propagating a certain lower frequency region of said spectrum generally along a first axis;

an ellipsoidal convex reflective dispersing means located on said axis spaced from said lower frequency reproducer means in the direction of sound propagation therefrom, to reflect and disperse acoustical energy from said lower frequency reproducer generally uniformly over a wide angle;

a plurality of discrete higher frequency reproducer means for reproducing and propagating a certain higher frequency region of said spectrum, said higher frequency reproducers being mounted substantially equispaced over the surface of said ellipsoidal dispersing means and being so spatially oriented with respect to one another as to cause their axes of propagation to diverge generally uniformly away from a point near the center of said ellipsoidal dispersing means;

means to permit commonly energizing each of said plurality of higher frequency reproducer means with a single higher frequency signal, and to permit energizing said lower frequency reproducer means with a lower frequency signal.

4,357,491

METHOD OF AND APPARATUS FOR DETECTING SPEECH IN A VOICE CHANNEL SIGNAL

Fouad Daaboul, Verdun, and Tiu Le Van, Touraine, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

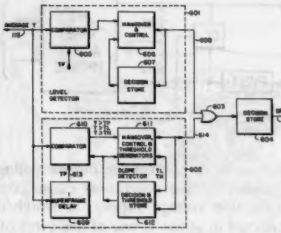
Filed Sep. 16, 1980, Ser. No. 187,816
Int. Cl.³ G10L *1/04*
U.S. Cl. 179—1 SP **13 Claims**

1. A method of detecting the presence of speech signals in a sampled voice channel signal, comprising the steps of:

producing a first signal state whenever the magnitude of a signal sample exceeds a first threshold level;

comparing the magnitude of each sample with that of the preceding sample;

whenever the magnitude of a sample is not greater than that of the preceding sample, setting a second threshold to a level which is greater than and is dependent upon the magnitude of the current sample;



whenever the magnitude of a sample is greater than that of the preceding sample, producing a second signal state if the magnitude of the current sample exceeds the second threshold; and

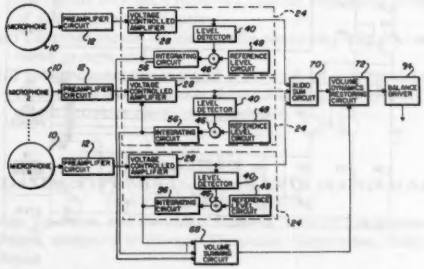
in response to each of the first and the second signal states, producing a signal, representing the presence of speech, at least in respect of the current sample.

4,357,492

AUTOMATIC MICROPHONE MIXING APPARATUS

Eugene Campbell, 7101 W. Yale, #704, Denver, Colo. 80227, and Terrance R. Whittemore, 7217 S. Independence, Littleton, Colo. 80123

Filed Oct. 3, 1980, Ser. No. 193,730
Int. Cl.³ H04R *27/00*
U.S. Cl. 179—1 AT **18 Claims**



7. An automatic sound mixing apparatus for use with a relatively substantial number of vocalists and/or instrumentalists, comprising:

a plurality of regulating means, each of said regulating means receiving an audio signal outputted by one of a number of microphones, each of said regulating means generating a volume control signal for controlling the level of the audio signal inputted thereto and for outputting a modified volume audio signal, each modified volume audio signal having a constant level;

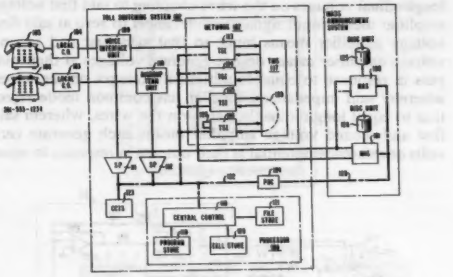
mixing means responsive to each of said regulating means wherein all modified volume audio signals are continuously inputted to said mixing means, said mixing means for combining each of the plurality of modified volume audio signals outputted by said plurality of said regulating means.

4,357,493

METHOD AND APPARATUS FOR STORING ANNOUNCEMENTS IN A COMMUNICATIONS SYSTEM

Thomas W. Anderson, Warrenville, Ill.; Robert V. Jenness, Boca Raton, Fla.; Richard J. Milczarek, Warrenville, Ill.; Edwin M. Schaefer, III, North Aurora, Ill., and Robert M. Stekl, Montgomery, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1981, Ser. No. 232,999
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—6.04 **14 Claims**



1. For use in a communications system having customer stations, an announcement system and switching means for interconnecting said announcement system over communication channels to said stations for transmitting prerecorded messages to said stations;

said announcement system comprising

a message store wherein segments of a particular message are stored in discrete sectors of said store for transmittal in a predetermined sequence during adjacent time intervals to reproduce said message,

a plurality of buffers associated with said particular message and each buffer adapted to transmit said particular message over one of said channels wherein the number of buffers equals the number of message segments of said particular message, and

means for loading the message segments of said particular message into first and second ones of said buffers, wherein said first and second buffers contain different message segments during a designated time period; and

said switching system comprising means responsive to a request from one of said stations for the reproduction of said particular message for selecting one of said first or second buffers according to the particular message segment currently loaded therein.

4,357,494

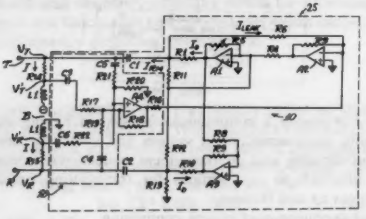
IMPEDANCE CANCELLER CIRCUIT

Charles W. Chambers, Jr., Downers Grove, Ill., assignor to Tellabs, Inc., Lisle, Ill.

Division of Ser. No. 45,274, Jun. 4, 1979, Pat. No. 4,283,604. This application Jun. 30, 1980, Ser. No. 164,307
Int. Cl.³ H04B *3/16, 3/28*
U.S. Cl. 179—16 F **11 Claims**

1. An impedance canceller for interfacing with a two-wire transmission system, for example with the tip and ring leads of a telephone pair, for generating a controlled current flow through the system to cancel an metallic impedance in the system and for providing common mode rejection to longitudinal voltages on the system, said impedance canceller having first and second outputs each for connection with a separate one of the wires and comprising first and second voltage amplifier means each having an input, an output and an output impedance connected between the amplifier means output and a separate one of said impedance canceller outputs, said first

voltage amplifier means output being connected through its output impedance with said impedance canceller first output; means for connecting said first amplifier means output with said second amplifier means input so that voltage signals at said first amplifier means input control the voltages generated at each of said amplifier means outputs; feedback means coupled between said impedance canceller first output and said first amplifier means input; and circuit means coupled between said impedance canceller outputs and said first amplifier means input, said feedback means and said circuit means coupling signals at said impedance canceller outputs from the wires on the transmission system to said first amplifier means input, said feedback means and said circuit means in response to equal longitudinal voltages on the wires coupling to said first voltage amplifier means input signals which cancel to zero at said first voltage amplifier means input so that said first and second voltage amplifier means do not generate voltages at their outputs in response to equal longitudinal voltages on the wires, whereby said impedance canceller has common mode rejection to equal longitudinal voltages on the wires, wherein said first and second voltage amplifier means each generate zero volts or reference potential at their outputs in response to equal



longitudinal voltages on the wires and substantially equal value and opposite direction current flows through their output impedances, and therefore at said impedance canceller outputs, in response to and having a value in accordance with noncancelling signals at said first amplifier means input, wherein the two-wire transmission system is of the type having a metallic impedance and a metallic voltage source connected across the wires, said impedance canceller including sensing circuit means for connection with said wires and said metallic impedance for sensing the current that would flow through the metallic impedance in response to the metallic voltage and for generating a control voltage having a value representative thereof; and means for coupling said control voltage with said feedback means and therefore with said first voltage amplifier means input to operate said first and second amplifier means to generate at said impedance canceller outputs a current flow having a value equal to that of the current that would flow through the metallic impedance in response to the metallic voltage, whereby said impedance canceller generates the current that would be provided to the metallic impedance by the metallic voltage source so that the metallic impedance is effectively cancelled with respect to and appears as an open circuit to the metallic voltage.

4,357,495

TELEPHONE LINE FEED

Anthony W. Sweet, Saffron Walden, and Michael P. Dyer, Stansted, both of England, assignors to Standard Telephones and Cables Limited, London, England

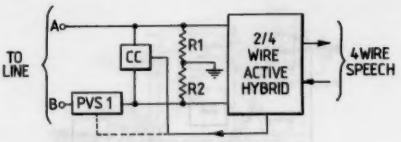
Filed Feb. 9, 1981, Ser. No. 232,913

Claims priority, application United Kingdom, Feb. 14, 1980, 8005000

Int. Cl.³ H04M *1/76, 19/00;* H04B *3/36*

U.S. Cl. 179—77 **8 Claims**

1. An arrangement as claimed in claim **1**, a line feeding arrangement for a two-wire telephone subscriber's line, including a high valued balancing impedance connected between the two wires of the line, said impedance having a center-tap which is grounded for speech signals, a variable voltage source supplied by the exchange power supply and whose output forms the voltage drive for the line, a high-impedance monitor circuit connected across the line so as to monitor the voltage between the two wires thereof, and a control circuit to which the output of said monitor is connected and which generates a reference voltage condition which is applied to the



voltage source so as to control the output voltage thereof, whereby variations in line conditions cause compensatory variations in the line voltage supply, in which the voltage source is connected in series in one of the wires of the line, a constant current circuit connected between the wires of the line in parallel with said balancing impedance, and in which the conditions of the constant current circuit are controlled in accordance with line conditions by said control circuit.

4,357,496

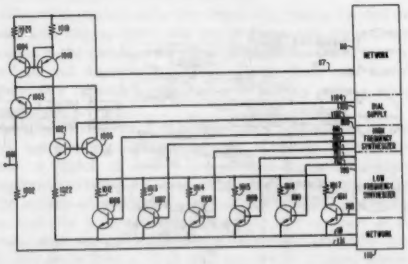
KEYPAD LOGIC INTERFACE CIRCUIT

Joseph J. Nahas, Wyomissing, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 103,403, Dec. 13, 1979. This application Nov. 30, 1980, Ser. No. 202,950

Int. Cl.³ H04M *1/50*

U.S. Cl. 179—84 VF **5 Claims**



1. A keypad interface circuit (**200**) for providing an output switch closure signal representative of a selected one of a plurality of digits on a keypad (**100**), the keypad interface circuit comprising:

a keypad detector circuit that includes a plurality of identical low group sections and a plurality of identical high group sections for detecting a switch closure on the keypad;

each low group section providing a signal representative of the switch closure for a particular row of digits and each high group section providing a signal representative of the switch closure for a particular column of digits, characterized in that:

the signal from each low and high group section in combination providing the switch closure signal; and

the switch closure signal being determined by diverting a current provided by a current source from a first to a second direction.

4,357,497

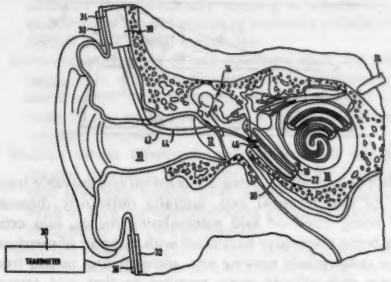
SYSTEM FOR ENHANCING AUDITORY STIMULATION AND THE LIKE

Ingeborg J. Hochmair, and Erwin S. Hochmair, both of Jaunerstr 27, A-1130, Vienna, Austria

Continuation-in-part of Ser. No. 77,791, Sep. 24, 1979, Pat. No. 4,284,856. This application May 26, 1981, Ser. No. 267,405

Int. Cl.[3] H04R *25/02*

U.S. Cl. 179—107 E 17 Claims



1. A multi-frequency system for electrical stimulation of selected tissue groups comprising:

(a) transmission means for transmitting a plurality of carrier signals each of which is modulated by a signal representing a band of frequencies, said transmission means including a plurality of signal processing channels corresponding to the plurality of bands of frequencies in the audio range, each signal processing channel including a bandpass filter for selecting a band of audio frequency signals, means for compressing the dynamic ranges of said audio frequency signals, means for compensating the loudness of said audio frequency signals dependent upon their frequency; and a transmitter for modulating a carrier signal with the processed audio frequency signal;

(b) multi-channel receiver means for receiving said transmitted signals with each receiving channel responsive to one of said transmitted signals;

(c) electrode means for electrically contacting said selected tissue groups; and

(d) means connecting a signal from each of said receiving channels to said electrode means whereby said electrode means provides electrical stimulation.

4,357,498

COAXIAL TYPE MULTI-WAY PLANAR DIAPHRAGM LOUDSPEAKER SYSTEM

Yukio Tsuchiya, and Kunihiko Shimada, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 164,405

Claims priority, application Japan, Jun. 30, 1979, 54-82952; Jun. 30, 1979, 54-82953; Jun. 30, 1979, 54-82954

Int. Cl.[3] H04R *9/02, 9/06, 7/06*

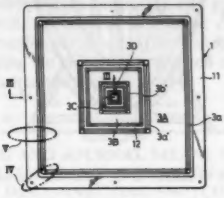
U.S. Cl. 179—115.5 DV 5 Claims

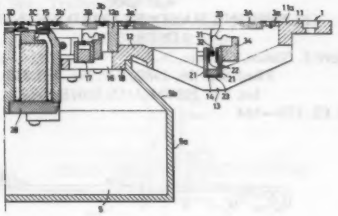
1. A coaxial type planar diaphragm loudspeaker system comprising:

a plurality of coaxially arranged polygonal-shaped planar diaphragms, at least one of said diaphragms being a bass range diaphragm;

a magnetic circuit for each of said diaphragms, at least one magnetic circuit being a bass range magnetic circuit and one being a treble range magnetic circuit, each magnetic circuit comprising a voice coil bobbin coupled at one end to a corresponding one of said diaphragms, a voice coil coupled to the other end of said voice coil bobbin, at least one magnet, said magnetic circuit forming a gap in which a magnetic field is imposed, said voice coil being operatively disposed in said gap, said voice coil bobbin comprising a plurality of elongated voice coil bobbin frames equal in number to the number of sides of one of said polygonal diaphragms with each of said voice coil bobbin frames being arranged parallel to one of the sides of said polygonal diaphragm to form a polygonal configuration similar to that of said polygonal diaphragm, each of said magnetic circuits forming each of said gaps in which said magnetic field is imposed having a configuration corresponding to said polygonal configuration of said corresponding plurality of voice coil bobbin frames;

said bass range magnetic circuit being disposed in an area outside an area where said treble range magnetic circuit is





disposed, said area where said treble range magnetic circuit is disposed being inside said area where said bass range magnetic circuit is disposed, each of said voice coil bobbin frames contacting one of said sides of said corresponding diaphragm at an intermediate portion thereof; and

a frame assembly comprising an outermost circumferential frame, an inner circumferential frame, and bridging frames interconnecting said inner and outermost frames, inner and outer sides of said bass range diaphragm being supported by said inner and outermost frames respectively, said bass range magnetic circuit being secured to and supported by said bridging frames.

4,357,499

ACOUSTIC TEST BOX

Per V. Brüel, Fuglevangsvej 5, Rungsted Kyst, Denmark (DK-2960)

PCT No. PCT/DK80/00018, § 371 Date Nov. 22, 1980, § 102(e) Date Nov. 14, 1980

PCT Filed Mar. 21, 1980, Ser. No. 217,009

Claims priority, application Denmark, Mar. 22, 1979, 1172/79

Int. Cl.[3] H04R *29/00;* G01V *1/00*

U.S. Cl. 179—175.1 A 7 Claims

1. An acoustic test box (1) comprising a rigid hollow top curved section (5) and a mating rigid hollow curved bottom section (4) and means (6) for connecting said two sections together to form a rigid hollow container, the inner surface of said container sections being lined with sound-absorbing materials (8,9) to enclose an anechoic test chamber accommodating a sound source (10), a test object (12) and a test microphone, all the surfaces of said container, the inner ones as well as the outer ones, consisting entirely of curved surfaces to enable the chamber to display an essentially constant velocity field and an essentially constant pressure field throughout the frequency

range over which the frequency response is to be tested and to thereby secure substantially the same frequency response from

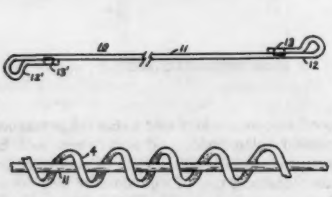
said test object whether it be pressure sensitive or velocity sensitive.

4,357,500

TELEPHONE HANDSET CORD ANTI-TWIST ACCESSORY

Robert J. Nilsen, Colonia, N.J.

Filed Sep. 26, 1980, Ser. No. 191,323
Int. Cl.³ H04M *1/15*; H01B *7/06*
U.S. Cl. 179—184 **7 Claims**



1. A telephone accessory attachment device to prevent twisting and entanglement of circular flexed helical extensible electrical telephone handset cords due to its construction and positioning in relationship to said cord comprising: a somewhat flexible elongate member having a length determined by the length of said circular flexed helical extensible electrical telephone handset cord and having a width which is less than the diameter of said cord and having, at opposite ends thereof, means for attachment to said cord; said member to be situated within the central hollow region of said cord and said means for attachment to be attached to said cord at the handset end thereof and at the opposite main telephone base end thereof; said device being constructed such that when so attached to said cord twisting and entanglement of said cord will be prevented.

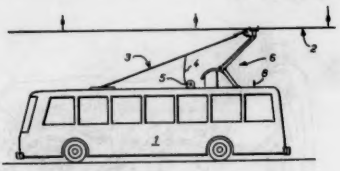
4,357,501

TROLLEY POLE MECHANISM FOR USE ON ELECTRICALLY-POWERED ROAD VEHICLES

Alain M. Clerc, Arcueil, France, assignor to Faiveley S.A., Bauer, France

Filed Sep. 24, 1980, Ser. No. 190,225
Claims priority, application France, Sep. 25, 1979, 79 23765; Mar. 21, 1980, 80 06308
Int. Cl.³ B60L *5/10*
U.S. Cl. 191—83 **21 Claims**

1. A trolley pole mechanism for use on an electrically powered road vehicle fitted with an auxiliary power source, the mechanism drawing power from a pair of overhead lines when in a deployed or raised position and comprising two trolley poles, each of said poles articulated to the roof of the vehicle and supporting a contact head, lifting means supporting a terminal unit comprising an isolating cross member, means for maintaining said cross member perpendicular to the longitudinal axis of the vehicle and manipulating means being clamped to said contact heads while said lifting means are being raised,



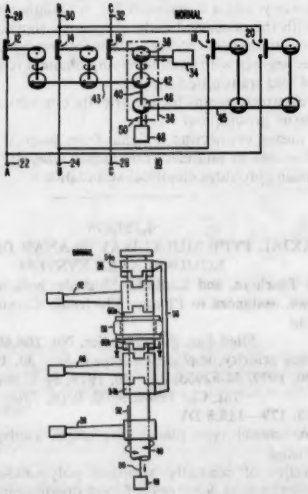
said manipulating means being mounted on and movable transversely of said terminal unit, laterally outwardly disposed sensors being fitted on said manipulating means, said cross member being responsive to contact with said pair of overhead lines for transversely moving said manipulating means from respective ends of said cross member so that said sensors contact said overhead lines, thereby bringing contact heads into contact with respective overhead lines.

4,357,502

PHASE REVERSAL SWITCH MECHANISM

Henry R. Beck, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,205
Int. Cl.³ H01H *9/00, 3/00*
U.S. Cl. 200—1 V **14 Claims**



1. Phase reversal switch apparatus, comprising:
first and second groups of reversing phase switches;
a non-reversing phase switch;
a rotatable operating shaft;
drive lever means coupled to said operating shaft so as to permit torque to be transmitted thereto;
switch actuator means connected to said drive lever for

moving said drive lever means to cause said operating shaft to rotate between OPEN and CLOSE positions;

non-reversing switch lever means coupled to said drive lever means to permit torque to be transmitted therefrom and connected to said non-reversing phase switch for rotating to operate said non-reversing phase switch between OPEN and CLOSE position;

first and second reversing switch lever means movably coupled to said operating shaft and respectively connected to said first and second groups of reversing phase switches for individually rotating to selectively operate said first and second groups of reversing switches between OPEN and CLOSE conditions;

drive means coupled to said operating shaft and selectively engageable with said first and second reversing switch lever means, for transmitting torque from said operating shaft to one of said reversing switch lever means when engaged therewith;

locking means selectively engageable with said first and second reversing switch lever means for locking one of said reversing switch lever means when engaged therewith to lock the corresponding group of reversing phase switches in the OPEN position;

shift link means coupled to said locking means, said drive means, and said first and second reversing switch lever means and operable between NORMAL and REVERSE positions for selectively engaging said locking and drive means with said first and second reversing switch lever means; and

a shift actuator connected to shift link means for moving said shift link means between said NORMAL and REVERSE positions;

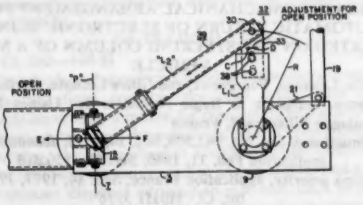
operation of said shift actuator being operable to move said shift link means to said NORMAL position causing said drive means to engage said first reversing switch lever means and said locking means to engage said second reversing switch lever means, whereby subsequent operation of said switch actuator means to the CLOSE position rotates said operating shaft to result in closing of said non-reversing phase switch and of said first group of reversing phase switches and locking of said second group of reversing phase switches in an open circuit condition;

operation of said shift actuator to move said shift link means to said REVERSE position causing said drive means to engage said second reversing switch lever means and said locking means to engage said first reversing switch lever means whereby subsequent operation of said switch actuator means to the CLOSE position rotates said operating shaft to result in closing of said non-reversing phase switch and said second group of reversing phase switches, and locking of said first group of reversing phase switches in an open circuit condition.

4,357,503
BLADE-ADJUSTMENT DEVICE FOR A DISCONNECTING-SWITCH STRUCTURE

Peter M. Kowalik, Trafford, Pa., assignor to Cleaveland/Price, Enterprises, Inc., Trafford, Pa.

Filed Dec. 22, 1980, Ser. No. 219,378
Int. Cl.³ H01H *31/30*
U.S. Cl. 200—48 A **12 Claims**

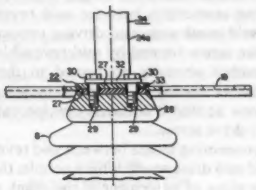


1. A disconnecting switch of the type having a swinging disconnecting switch-blade (15) cooperable with a stationary switch-jaw contact (13), in combination, operating means for said disconnecting switch including a rotatable crank-arm means (23) having an outer free-end portion, an adjustment means (32) having an adjustable mechanical connection with said outer free-end portion of the rotatable crank-arm means (23), operating linkage-means mechanically interconnecting said swinging disconnecting switch-blade with said adjustment means, said adjustment means having a longitudinal adjustment connection with said rotatable crank-arm means (23) for thereby independently determining the end closing position of said swinging disconnecting switch-blade (15) with respect to said stationary switch-jaw contact (13), said adjustment means additionally having an angular adjustment connection with said rotatable crank-arm means (23) for thereby also independently determining the end opening position of said swinging disconnecting switch-blade (15).

4,357,504
BEARING AND JOURNAL MEANS FOR THE ROTATABLE CRANK-ARM ASSEMBLY OF A DISCONNECTING SWITCH

Charles M. Cleaveland, North Huntingdon, and Peter M. Kowalik, Trafford, both of Pa., assignors to Cleaveland/Price Enterprises, Inc., Trafford, Pa.

Filed Dec. 24, 1980, Ser. No. 219,880
Int. Cl.³ H01H *31/30*
U.S. Cl. 200—48 R **5 Claims**



1. A disconnecting switch comprising at least a pair of spaced generally-parallel disposed insulator supports (7, 8), one of which (8) is rotatable and the other insulator support (7) being stationary, a relatively-long, flat plate-like conducting bridging member (19) bridging the confronting ends of the pair of generally-parallel spaced insulator supports (7, 8), said relatively-long, flat plate-like bridging member (19) being fixedly secured to the end of the stationary insulator support (7) and having a journal opening (33) provided therein adjacent one end of the other rotatable insulator support (8), a stationary hinge assembly (17) constituting a separate entity from said relatively-long, flat plate-like bridging member (19) and supported by said stationary insulator support (7), a swinging disconnecting switch-blade assembly (15) pivotally mounted about said stationary hinge assembly (17), means defining a third spaced insulator support (5) supporting a stationary break-jaw contact assembly (13) with which the free end of the swinging disconnecting switch-blade assembly (15) makes separable contacting engagement during the opening and closing movements of the disconnecting switch, operating crank means (20) disposed adjacent the other end of said rotatable insulator support (8) for effecting the opening and closing rotative movement thereof, at least one insulating bearing disc (27) disposed within said journal opening (33) of said relatively-long, flat plate-like conducting bridging member (19), a rotatable crank-arm assembly (24) secured by one or more bolts (30) through said insulating bearing disc (27) to said one end of the rotatable insulator support to prevent current flow from said rotatable crank-arm assembly (24) to said relatively-long, flat plate-like bridging member (19), and linkage means (25) mechanically interconnecting the rotatable crank-arm assembly (24) with the swinging disconnecting switch-blade

assembly (15) for effecting the opening and closing motions thereof.

4,357,505

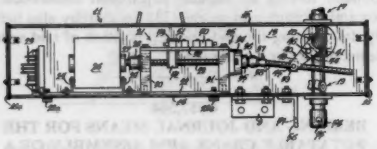
POWER DRIVEN GROUP OPERATED CIRCUIT DISCONNECT APPARATUS FOR OVERHEAD ELECTRIC POWER LINE

Ronald P. Bridges, Heber Springs, Ark. 72543

Continuation of Ser. No. 74,127, Sep. 10, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,645

Int. Cl.³ H01H *3/26*

U.S. Cl. 200—48 KB **27 Claims**



1. In an electric circuit disconnect apparatus which has a base rotatable shaft means on said base, and a disconnect switch blade moved between closed and open positions by rotation of said shaft means, a power drive for rotating said shaft means comprising, in combination:

a power unit which has a reversible rotary shaft;

a crank arm on said shaft means;

a driving connection between said reversible rotary shaft and said crank arm, said driving connection including,

a drive screw rotated by said reversible rotary shaft,

a member pivotally connected to the crank arm, said member having a threaded mounting on said drive screw so that it is linearly reciprocated by rotation of the drive screw,

and connecting means between said reversible rotary shaft and said drive screw which permits the latter to pivot in the plane of movement of the crank arm so as to compensate for the difference between the linear reciprocation of said pivotally connected member and the arcuate movement of the crank arm;

power control means for starting said power unit;

and additional power control means for automatically stopping said power unit effectively simultaneously with arrival of the switch blade at fully closed position and at fully open position.

7. In a group operated electric circuit disconnect apparatus for a plurality of overhead electric power distribution lines carried on poles of a type which includes a box-like housing adapted to be mounted adjacent the top of a pole, said housing having opposite ends which are open, a removable closure for each of said open ends, a first disconnect switch surmounting the housing, second and third disconnect switches mounted at opposite sides of the housing, an upright shaft means journalled on and extending through said housing, said upright shaft means being operatively connected to said first switch so that axial rotation of the upright shaft means opens and closes the first switch, transverse shaft means journalled on and extending through said housing, said transverse shaft means being operatively connected to said second and third switches so that axial rotation of said transverse shaft means opens and closes said second and third switches, and a mechanical connection between said upright shaft means and said transverse shaft means within said housing so that axial rotation of one of said shaft means causes axial rotation of the other of said shaft means, the improvement comprising, in combination:

a subassembly in the housing which is removable through one of said open ends, said subassembly including:

(1) a reversible electric motor having a rotatable shaft,

(2) a first part of a driving connection between said electric motor shaft and one of said shaft means for axially rotating said one of said shaft means from said rotatable shaft to selectively open or close the three disconnect switches,

(3) an electric terminal block for connection between an energizing circuit and said electric motor,

(4) power control means for automatically stopping the electric motor simultaneously with arrival of the disconnect switches at fully closed position and at fully open position;

a second part of said driving connection which is immediately adjacent the other of said open ends and manually detachable from said first part;

and a motor start switch in said energizing circuit remote from said housing.

4,357,506

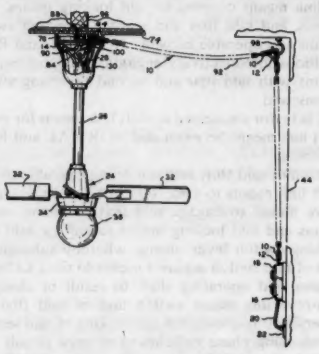
SWAG KIT FOR CEILING MOUNTED FANS

Frank E. Breining, Jackson, Mich., assignor to Airmaster Fan Company, Jackson, Mich.

Filed Mar. 27, 1981, Ser. No. 248,431

Int. Cl.³ H01H *9/00*

U.S. Cl. 200—52 R **8 Claims**



1. A swag kit for ceiling mounted fans comprising, in combination, a flexible electrical conductor having an upper fan related end region and a lower switch related end region, a surface mounted switch box having conductor lower end region support means defined therein fixedly receiving said conductor lower end region, a ceiling plate having conductor upper end region support means defined thereon fixedly receiving said conductor upper end region, said ceiling plate having an upper surface and a lower surface, spacer means defined upon said plate upper surface, mounting means defined on said plate for attaching said plate to a ceiling in spaced relation thereto as determined by said spacer means, fan support means depending from said plate, switch means mounted within said switch box electrically connected to said conductor lower end region, and an electric supply conductor connected to said switch means.

4,357,507

ELECTROMECHANICAL ARRANGEMENT FOR AUTOMATIC RETURN OF ELECTRONIC BLINKER LOCATED ON THE STEERING COLUMN OF A MOTOR VEHICLE

Camille Labaune, Fourgueux, and Gilles Leconte, Paris, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Continuation of Ser. No. 942,308, Sep. 14, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,316

Claims priority, application France, Sep. 14, 1977, 77 27712

Int. Cl.³ H01H *3/16*

U.S. Cl. 200—61.27 **9 Claims**

1. An electromechanical arrangement for automatic return

of an electronic directional indicator placed on a steering column of a motor vehicle, which comprises:

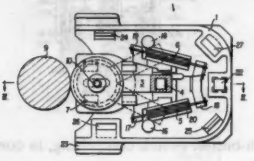
a housing supported on the steering column;

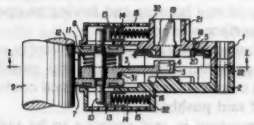
electrical contacts on the housing for connection to an electrical circuit;

a movable arm carried by the housing and having means at one end thereof in engagement with the steering column for imparting rotation to the arm when the steering column is rotated;

electrical switch means in the housing positioned so as to be adjacent an opposite end of the movable arm when the movable arm is rotated in one direction or another in response to rotation of the steering column and contacting said electrical contacts;

stop means at a predetermined angle on each side of a plane of symmetry of said housing, fixedly connected to the housing at the same angular and radial distance on either





side of the plane of symmetry, for stopping the arm in predetermined juxtaposed relationship with the switch means;

means carried by the arm at said opposite end thereof for operating the switch means in response to predetermined, juxtaposed relationship therewith, and free of mechanical interconnection therebetween, whereby operation of the switch means results in automatic return of a directional signal indicator connected in the electrical circuit;

wherein said means for operating the switch means comprises a magnet, and said switch means comprises flexible-strip switches in glass bulbs; and

wherein said switch means are in a plane parallel to that in which said movable arm travels in the course of its rotation and are situated so as to be farthest apart at their ends nearest the steering column, with an acute angle being formed between their longitudinal directions.

4,357,508

HIGH-VOLTAGE CIRCUIT BREAKER

Peter Werner, Frankfurt am Main, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

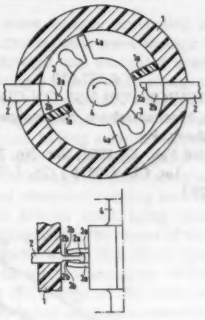
Filed Jun. 30, 1980, Ser. No. 164,576

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1979, 2930830

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 H **5 Claims**

1. In a high-voltage circuit breaker including a housing into which two fixed contacts per pole extend and movable contacts secured to a bridge for connecting and disconnecting the fixed contacts and the movable contacts upon movement of the bridge, the improvement comprising the fixed contacts each comprising a main contact at an end thereof and a preliminary contact disposed adjacent to said end, each preliminary contact being smaller in thickness than the thickness of the main contact, the movable contacts each comprising a pair of opposed flexible members capable of being spread apart by a respective thicker main contact of the fixed contacts, a preliminary contact being disposed at the free end of the flexible members and a main contact being disposed adjacent to said free end, a respective main contact of the movable contacts adapted to be contacted by a respective thicker main contact of the fixed contacts such that the flexible members are flexed and spread when the main contact of a respective fixed contact enters therebetween, the preliminary contacts and the main



contacts of the fixed and movable contacts being adapted to make respective electrical contact, the preliminary contacts of respective fixed contacts and of respective movable contacts cooperating to make electrical contact between the fixed and the movable contacts prior to the main contacts of the fixed and movable contacts making electrical contact, and further cooperating to break electrical contact between the fixed and the movable contacts after the main contacts of the fixed and the movable contacts break electrical contact.

4,357,509

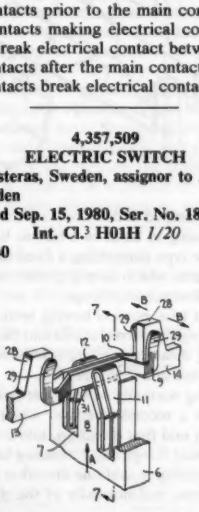
ELECTRIC SWITCH

Bo Adlerteg, Västeras, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden

Filed Sep. 15, 1980, Ser. No. 187,340

Int. Cl.³ H01H *1/20*

U.S. Cl. 200—240 **4 Claims**



1. In an electric switch comprising a switch body, at least one fixed contact member mounted on the switch body, two elongated, substantially parallel, movable contact members which, in the closed position of the switch, are pressed under the influence of contact pressure springs against said at least one fixed contact member on opposite sides thereof, a wedge-shaped element displaceable between the movable contact members for opening and closing the switch, said element being arranged on an operating member which is linearly displaceable between two end positions, and means guiding the movable contact members in the switch body in such a way that, during the displacement of the operating member, they move substantially perpendicular to the direction of displacement of the operating member, the improvement according to

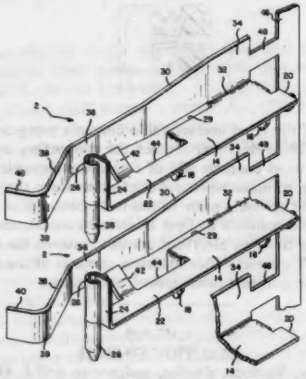
which said movable contact members are of elongated cross-section and are guided between said wedge-shaped element and said contact pressure springs for rotation with respect to said at least one fixed contact member during both contact closing and contact opening, thus achieving a rolling contact movement.

4,357,510

SWITCH DEVICE FOR USE ON CIRCUIT BOARD

Jon A. Fortuna, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1981, Ser. No. 238,885
Int. Cl.³ H01H 1/26, 1/28
U.S. Cl. 200—283 **9 Claims**



1. A one-piece stamped and formed switch device which is intended for mounting in holes in a circuit board as a circuit board switch of the type comprising a fixed contact post and a cantilever spring arm which is engageable with said contact post, said switch device comprising:

an elongated flat base portion having spring arm mounting means extending therefrom at one end thereof, said spring arm mounting means extending substantially normally of said base portion in a first direction,

a flange extending normally of said base portion at the other end thereof in a second direction which is the opposite direction from said first direction, said contact post being integral with said flange and extending beside said flange, said post projecting in said one direction past the plane of said base portion, and normally of the plane of said base portion,

said cantilever spring arm being disposed beside said base portion in a plane which extends normally of the plane of said base portion, said spring arm having a fixed end which is integral with said base portion at said one end, said spring arm extending beside said base portion and past said flange whereby,

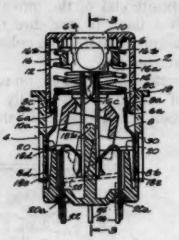
upon insertion of said spring arm mounting means and said contact post into circuit board holes and soldering said mounting means and said post to conductors on the underside of said circuit board, and upon thereafter removing intermediate portions of said base, said contact post will be electrically isolated from said spring arm mounting means and said spring arm can flex against portions of said post thereby providing a switch on said circuit board for switching said two conductors.

4,357,511

MODULAR PUSH-BUTTON SWITCH WITH LIGHTED PUSH-BUTTON ELEMENT

Richard B. Tenner, Oak Creek, and Robert G. Bracey, Germantown, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 4, 1981, Ser. No. 299,440
Int. Cl.³ H01H 9/18
U.S. Cl. 200—314 **17 Claims**



1. A push-button switch comprising, in combination:

a housing;

switch contacts in said housing;

a pushbutton mounted in said housing for depression inwardly of said housing and having an opening through an outer surface thereof;

means biasing said pushbutton outwardly of said housing;

means operatively connecting said pushbutton and said switch contacts for actuation of said contacts upon depression of said pushbutton;

a lamp mounted in said opening to be visible at the outer surface of said pushbutton and having electrical leads extending through said opening to the interior of said switch housing, said leads being solid conductors extending unsupported from said lamp and parallel to the direction of travel for said pushbutton;

lamp contacts mounted in said housing for resiliently engaging said leads and permitting relative sliding movement between said leads and said lamp contacts; and

wherein said housing includes guide means for said leads and said lamp contacts engage said leads on a side opposite said guide means to bias said leads against said guide means.

4,357,512

APPARATUS FOR CONTINUOUS MANUFACTURE OF BUTT-WELDED PIPE

Koji Nishimoto; Kenji Higuchi; Toshiyuki Oki, and Nobuo Machida, all of Ibaraki, Japan, assignors to Sumitomo Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan

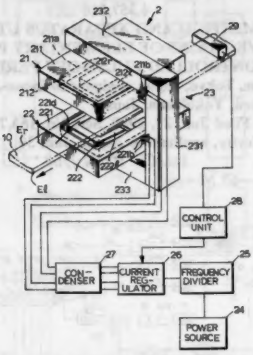
Filed Jul. 23, 1980, Ser. No. 171,542
Int. Cl.³ H05B 6/06, 6/40
U.S. Cl. 219—8.5 **19 Claims**

1. An apparatus for continuous manufacture of butt-welded pipes, comprising:

a heating furnace for heating a skelp continuously passed therethrough up to a predetermined temperature;

a heater means having at least one heater with spaced opposed induction heating coil means on opposite sides of the path along which the skelp is passed through said heater means, said induction heating coil means being a pair of induction heating coils positioned in spaced opposed relative above and below the path of the skelp, said coils having a generally rectangular shape with a width at least as wide as the skelp and having the longer side substantially aligned with the edge portions of the skelp passing through the space between said coils in a position for concentrating the current induced in the skelp for heating only the edge portions of the skelp discharged

from said heating furnace up to the butt-welding temperature, and having means connected to at least one of said induction heating coil means for varying the electromagnetic coupling between said one induction heating coil means and the corresponding edge portion of the skelp for adjusting the temperature to which the corresponding edge portion is heated;



bending means adjacent the outlet end of said heater means for bending the skelp into a generally tubular form; and

butt-welding rolls adjacent the outlet end of said bending means for applying a predetermined pressure to the bent up skelp for butt-welding the edges of the skelp to each other.

4,357,513

MICROWAVE OVEN WITH A VERTICALLY TRANSLATABLE RESISTANCE HEATER OR THE LIKE

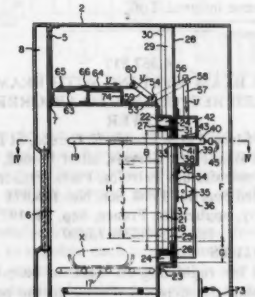
Yukio Kawata; Tetsuo Obata; Chouji Keino, and Isamu Tayama, all of Ojima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,902

Claims priority, application Japan, Jul. 30, 1979, 54-97146; Feb. 20, 1980, 55-20124; Mar. 24, 1980, 55-38279; Mar. 24, 1980, 55-38282

Int. Cl.³ H05B *6/76*

U.S. Cl. 219—10.55 B **9 Claims**



1. A high frequency heating apparatus, comprising:

an enclosure defining therein a heating chamber for accommodating therein an article to be heated and having an elongated opening extending therethrough;

electromagnetic wave supply means for supplying electromagnetic waves of a substantially predetermined wave length into said heating chamber for dielectric heating of said article;

a member movably extending through said elongated opening from interior to said heating chamber to exterior to said heating chamber;

means for supporting and guiding said member with respect to said enclosure for a guided translational movement within and along said elongated opening in the enclosure;

means for moving said guided member within said elongated opening and holding the member at at least two positions; and

electromagnetic wave leakage preventing means for preventing an electromagnetic wave leakage from said heating chamber through said elongated opening, including means for defining a substantially elongated first annular space defined by an electrically conductive material and disposed along a periphery of said elongated opening, said first annular space having a circumferentially extending communication port at the inner periphery thereof for introducing therethrough the electromagnetic waves passing through said elongated opening into said first annular space, said first annular space being dimensioned to be effective for extinguishing, by means of the choked effect, the electromagnetic waves introduced therein;

whereby said member is translatable within said heating chamber while the leakage of the electromagnetic waves through said elongated opening is substantially prevented;

wherein said electromagnetic wave leakage preventing means comprises a plate member attached to said supporting means and movable with respect to said enclosure for substantially closing said elongated opening in the enclosure and the inner space defined by the inner periphery of said elongated first annular space, said plate member being dimensioned to substantially close said elongated opening and said inner space irrespective of the position of said supporting means;

and wherein said elongated opening has a longitudinal length substantially equal to an odd multiple of a quarter of a fundamental wave length of said electromagnetic waves, and said communication port of said first annular space is substantially hermetically sealed by a cover member which is formed of a refractory material which is transparent to said electromagnetic waves.

4,357,514

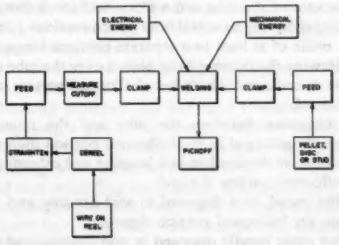
WELDING METHOD AND APPARATUS

Kenneth R. Chason, Hadley, Pa., assignor to GTI Corporation, Hadley, Pa.

Division of Ser. No. 160,582, Jun. 18, 1980, Pat. No. 4,319,118. This application Apr. 27, 1981, Ser. No. 257,914

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—56.1 **1 Claim**



1. An apparatus for welding a wire to an item comprising means including a micrometer for selecting and cutting a length of wire, means for gripping the cut length of wire, means for holding the item, spring driven means for driving the end of the wire and a surface of the item together, an electrical

circuit including the wire length and the item for releasing electrical energy,

an adjustable voltage alternating current source,

rectifying means having a direct current output,

first means for coupling the adjustable alternating current source to the rectifying means including a switch,

means for storing electrical charge having a plurality of selectable capacitors,

second means for coupling the direct current output of the rectifying means to the means for storing electrical charge for increasing the energy stored in the said storing means,

third means for coupling one side of the storing means to either the wire or the item,

fourth means for coupling the other side of the storing means to the other of the wire or the item including a switch and a resistive element in series with the switch,

switch activating means for causing the switch in the first coupling means to open and the switch in the fourth coupling means to close prior to the time the wire and the element are moved together, and

said resistive element selected to minimize the intensity of the arc, if any, prior to contact and to provide an arc after contact which is maintained by melting back the tapered end of the wire.

4,357,515

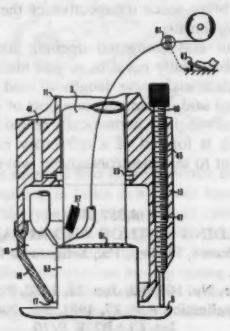
MANUAL TUBE-TO-TUBESHEET WELDING TORCH

Joseph H. Kiefer, and Danny J. Smith, both of Tampa, Fla., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 21, 1980, Ser. No. 142,190

Int. Cl.³ B23K *9/02*

U.S. Cl. 219—60.2 **2 Claims**



1. A welding torch which fits over a tube to form a weld at the juncture of the tube and a plate, said torch comprising

a housing having a central bore which receives a tube, which is made of at least two separate portions hinged together allowing the housing to be placed over the tube intermediate its ends, and which has a ballooned portion on one end thereof;

the clearance between the tube and the housing being greatly enlarged in the ballooned portion thereof;

an electrode disposed in said housing and extending into the ballooned portion thereof;

a filler metal duct disposed in said housing and extending into the ballooned portion thereof;

a fiber optic bundle disposed in said housing and extending into said ballooned portion adjacent the electrode and filler metal duct to allow continuous visual observation of the weld and the addition of filler metals thereto;

a circumferential groove disposed in the central bore adjacent the ballooned portion;

a shielding gas duct disposed in said housing in fluid communication with the circumferential groove to provide shielding gas to the weld; and

means for setting the distance between the electrode and the plate to maintain the proper arc voltage as the housing and electrode are rotated around the tube to provide a weld at the juncture thereof.

4,357,516

EDM METHOD AND APPARATUS UTILIZING SUCCESSIVE TRAINS OF ELEMENTARY PULSES WITH CONTROLLED PULSE-OFF PERIODS

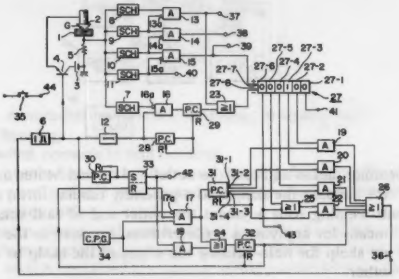
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jun. 27, 1980, Ser. No. 163,795

Claims priority, application Japan, Jun. 30, 1979, 54-83013

Int. Cl.³ B23K *1/08*

U.S. Cl. 219—69 M **15 Claims**



1. A method of the electrical-discharge-machining of a workpiece juxtaposed with a tool electrode across a fluid-filled machining gap, the method comprising the steps of:

(a) applying across said machining gap a succession of time-spaced trains of elementary machining pulses having an on-time τon and an off-time τoff, the trains having a duration Ton and a cut-off time interval Toff; and

(b) in response to a gap condition of a first predetermined class:

(b_1) increasing one of said off-time τoff and said cut-off time interval Toff, and

(b_2) also decreasing the other of said off-time τoff and said cut-off time interval Toff.

4,357,517

ELECTRON BEAM WELDING WITH BEAM FOCUS CONTROLLED RESPONSIVE TO ABSORBED BEAM POWER

Bruno J. M. de Sivry, Paris; Claude R. Carsac, St Leu la Foret, and Christian Bonnet, St Gervais, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Sep. 11, 1980, Ser. No. 186,071

Claims priority, application France, Sep. 14, 1979, 79 22949

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 ES **7 Claims**

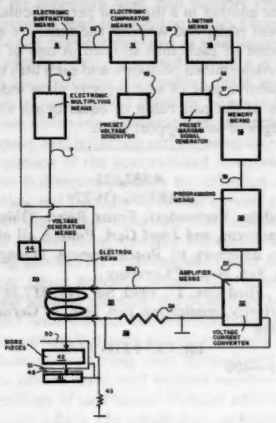
1. A process for regulating an electron beam welding of pieces, comprising the steps of: measuring the power of the electron beam emitted from an electron gun;

measuring the power passing through said pieces to be welded;

substracting said measured power passing through said pieces from said measured power of said gun electron beam;

comparing said difference to a preset constant value obtained from previous tests for getting good mechanical and metallurgical characteristics of the weld; and

utilizing a signal resulting from this comparison for adjusting a focusing of said electron beam so as to produce a weld



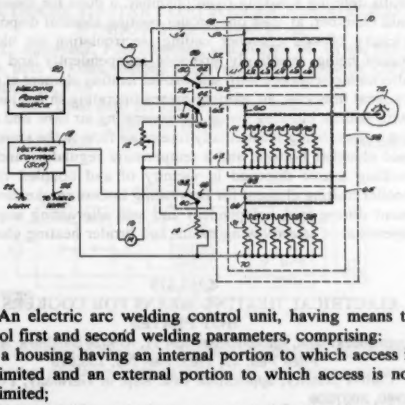
having said good mechanical and metallurgical characteristics.

4,357,518

MULTISCHEDULE WELDING CONTROL

Gilbert F. Meyer, Brookfield, Wis., assignor to Machinery Welder Manufacturing Corp., Greendale, Wis.

Filed Aug. 14, 1981, Ser. No. 293,416
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—130.1 **8 Claims**



6. An electric arc welding control unit, having means to control first and second welding parameters, comprising:

A. a housing having an internal portion to which access is limited and an external portion to which access is not limited;

B. first variable control means operated from said external portion to regulate each said parameter;

C. second preset control means within said internal portion to provide plural welding schedules, each schedule comprising preset values for said first and second welding parameters;

D. mode selection means, operable only from said internal portion, switchable between a first state allowing said first variable control means to be used to regulate said welding parameters and a second state allowing said second preset control means to provide one of said plural welding schedules; and

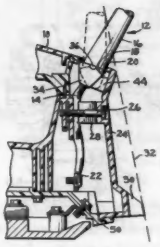
E. selector switch means to select one of said plural welding schedules.

4,357,519

ELECTRIC FLATIRON HAVING A FRICTIONALLY RESTRAINED SWIVELED POWER CORD

Benjamin H. Bain, Jr., Monroe, Conn., assignor to General Electric Company, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,071
Int. Cl.³ D06F *75/28*; H01R *13/56*
U.S. Cl. 219—256 **5 Claims**



1. In an electric flatiron having an elongated handle, a connected cord with internal conductors for supplying power to said flatiron and extending generally vertically from the back of the handle, a rear cover over the iron and internal conductor terminals connected to the cord, and, with the rear of the handle, supporting the iron in a multiple-point heel rest position, the improvement in said cord connection comprising:

said rear cover having a first pair of transversely spaced inwardly extending parallel ribs straddling and confining the internal conductors,

an elongated slot extending front to back in the handle top,

a cord bushing enclosing said conductors and disposed in the slot,

said bushing having an integrally formed enlarged end within said handle straddling and locking said bushing directly in the slot,

bushing limit stops in said slot at the front and rear thereof, said bushing being self-positioning and swivelling from front to back in said slot along a longitudinal handle axis between said stops,

internal friction pivot means between said end and said handle with the pivot axis disposed transversely of said longitudinal axis of said handle permitting front to back pivoting of the bushing in the slot while closing the slot during pivoting therein.

said pivot means comprising a transverse pivot rib on each side of said slot,

said bushing enlarged end having a U-shaped extension comprising a pair of transversely spaced parallel frictional bearing ears each with a pivot notch therein engaging with one of said pivot ribs,

said ears straddling and locking in said slot by projecting beyond the slot, with each rib and notch engagement forming a transverse axis for said longitudinal swivelling, and

said parallel cover ribs being disposed between said frictional bearing ears and maintaining said ears separated for said positive locking in said slot by said enlarged end,

while permitting said cord to frictionally pivot into substantial fixed position for non-interference in normal ironing and in said heel rest position.

4,357,520

ELECTRIC WATER-BOILING CONTAINER HAVING SWITCH-ON DRY AND STREAM SENSITIVE THERMALLY RESPONSIVE CONTROL UNITS

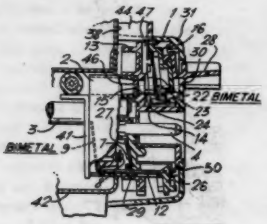
John C. Taylor, 9 Homefield Park, Ballasalla, Castletown, Isle of Man

Filed Mar. 18, 1980, Ser. No. 131,482

Claims priority, application United Kingdom, Mar. 23, 1980, 7910288

Int. Cl.³ H05B *1/02*; H01H *37/04*; A47J *27/62*

U.S. Cl. 219—330 5 Claims



1. An electrically heated container for boiling liquids provided with a thermally sensitive electrical control including a switch-on-dry protector switch unit enclosed in a protective housing and making direct electrical connection with the cold leads of an electric heating element located externally on said container in heat exchange relation thereto and including thermally sensitive switch means effective, in use, to interrupt the electrical supply to said heating element; terminal pins carried by and projecting from said protective housing of said protector switch unit and adapted to be engaged by a female socket connector whereby electrical connection of said heating element to a main supply can be made, said protector switch unit being mounted on a mounting plate, said mounting plate being located within a detachable base member and externally of said container in thermal contact with said heating element; said mounting plate conducting heat to said switch unit to cause said switch means to operate and interrupt said electrical supply to said heating element should the element overheat when the container is switched on dry, said switch means also operating should the element overheat when the container is boiled dry.

4,357,521

ELECTRICAL HEATING DEVICE FOR FLUID MEDIA

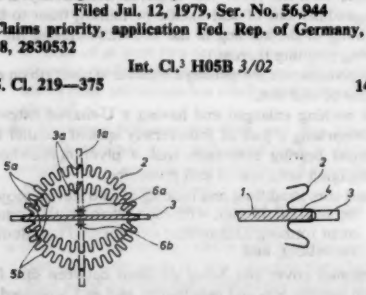
Helmut Ohnmacht, and Klaus Meywald, both of Kandel, Fed. Rep. of Germany, assignors to Firma Fritz Eichenauer, Kandel, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 56,944

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830532

Int. Cl.³ H05B *3/02*

U.S. Cl. 219—375 14 Claims



1. An electrical heating device for fluid media, comprising a heating conductor of resistance wire and a support plate having edges provided with indentations in which said conductor is located, the heating conductor being formed as a helical coil having a plurality of turns, arranged about the support plate with spacing, neighbouring turns of the coil being offset relatively to one another in a direction perpendicular to the plane of the support plate, and wherein the turns are arranged with a central point of each turn situated in one of a plurality of different predetermined positions, and each turn being engaged with a respective pair of said support plate indentations, the indentations of the pair being of equal depth and located on opposite edges of said support plate.

4,357,522

BAKING OVEN

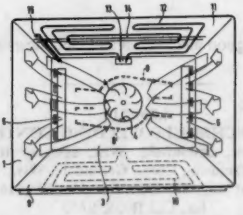
Julius Husslein, Vachendorf; Franz Röhrl, Obing; Karl Nitzinger, Traunreut, and Josef Gerl, Palling, all of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,385

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1979, 2950946

Int. Cl.³ F27D *11/02*

U.S. Cl. 219—400 14 Claims



1. Baking oven comprising a chamber ceiling, bottom and walls defining a baking oven chamber, a door for closing off said chamber, at least one broiler heating element disposed in vicinity of said chamber ceiling, recirculating air blowing means being selectively operable independently and in an alternating sequence with said broiler heating element at preset cyclical intervals, air guiding means operating in conjunction with said air blowing means for generating air flow and defining a space being substantially free of air flow in the vicinity of said chamber bottom, and a temperature regulating and controlling sensor disposed in vicinity of and coupled to said broiler heating element for preventing intense smoke development during said independent and said alternating sequence operation of said blowing means and broiler heating element.

4,357,523

ELECTRICAL HEATING MEANS FOR COOKERS OR HOT PLATES

Ingo Bleckmann, Ignaz-Rieder-Kai 11, A-5020 Salzburg, Austria

Filed Feb. 27, 1981, Ser. No. 238,670

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007806

Int. Cl.³ H05B *3/68*

U.S. Cl. 219—464 8 Claims

1. An electrical heating means for cookers and hot plates having a heat-radiation transmitting plate, a heat-resistant support member spaced from and disposed below a portion of

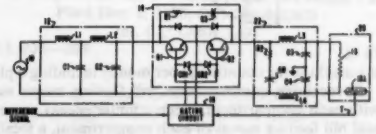
the heat-radiation transmitting plate, heat insulating means spaced from and disposed below a portion of said support member and having a heat reflecting surface facing said support member for reflecting heat, said support member being adapted to receive at least one electric heater filament, at least one electric heater filament disposed in said support member, said support member being disposed within a hollow space between said heat-radiation transmitting plate and said heat insulating means, said support member being provided with cut-out portions enforcing convection of air enclosed within said hollow space, said reflecting surface being disposed so that a substantial portion of the heat radiated downwards by said heater filament is directed partially by reflection at said heat reflecting surface and partially by the air current passing over said heat reflecting surface onto said heat-radiation transmitting plate and onto a vessel standing thereupon, said support member having grooves for receiving said heater filament, said heater filament being helically wound and arranged in the grooves of said support member, the bottom of said grooves being provided with the cut-out portions, through which a convective air current is drawn and directed upwards against said heat-radiation transmitting plate through said heater filament when in heated state, said support member having between the windings of said heater filament additional cut-out portions through which the convective air current streams downwards against the heat reflecting surface, said support member having a flange around the periphery thereof, an upper surface of the flange contacting a lower surface of the heat-radiation transmitting plate and a lower surface of the flange contacting said heat insulating means so that said flange encloses the space between said heat-radiation transmitting plate and said support member and the space between said support member and said heat insulating means.

4,357,524

ELECTRICAL HEATER CONTROLLER FOR AIRCRAFT WINDOW HEAT CONTROL

Otto L. Apfelbeck, Fort Shawnee, and Joseph M. Urish, Shawnee, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 29, 1980, Ser. No. 116,515
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—501 **5 Claims**



1. An electrical resistance heater controller, for controlling application of power from an AC source to a heating element, comprising:

bilateral switching means for maintaining or interrupting the circuit between the source and the heating element;

gating means for turning said switching means on and off periodically at a frequency at least about an order of magnitude higher than the source power frequency, said gating means being receptive of and responsive to a temperature signal from a sensor proximate said heating element, and said gating means controlling the on to off ratio of conduction of said switching means within each high frequency segment; and

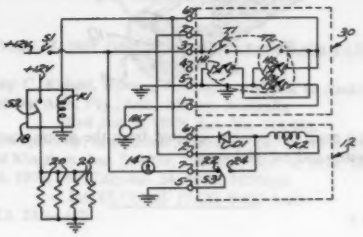
input filter means connected on the source side of said switching means for providing a low impedance path for harmonics generated by said switching means.

4,357,525

GLOW PLUG DUTY CYCLE MODULATING APPARATUS

Richard Jenne, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1980, Ser. No. 118,285
Int. Cl.³ H05B *1/02*; F02N *17/00*
U.S. Cl. 219—511 **4 Claims**



1. Apparatus for providing a thermal analog of an electrically heatable resistance heater and to modulate the duty cycle of power supplied to such resistance heater comprising

a housing, a heat sink having a surface disposed in the housing, first and second ceramic like heater elements having a positive temperature coefficient (PTC) of resistance above an anomaly temperature mounted on the surface of the heat sink in thermally coupled relation therewith, a heat sensitive switch mounted on top of each of the first and second heater elements in thermally coupled relation with each respective heater element, means to connect the switches in series circuit relation and connectable to means controlling the energization of the resistance heater and to an energizing switch, one of the two switches modulating the current flow to the resistance heater, the other of the two switches service as a back up protector, means to electrically energize the first and second heater elements concomitantly with the energization of the resistance heater means to interrupt flow to the resistance heater upon the occurrence of a preselected condition comprising a third ceramic like heater element mounted on the surface of the heat sink and thermally coupled thereto and means to electrically energize the third heater element, heat generated by the third heater being transferred to the first and second heater elements so that after a given time at least one of the first and second heater elements will be maintained above its anomaly temperature to thereby keep its respective heat sensitive switch deenergized.

4,357,526

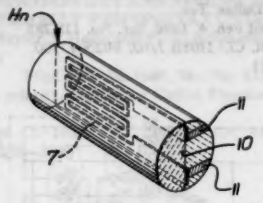
CERAMIC HEATER

Shigeyoshi Yamamoto; Nobukazu Sagawa, and Noriyoshi Nakanishi, all of Kokubu, Japan, assignors to Kyoto Ceramic Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 133,602, Mar. 24, 1980, abandoned. This application Sep. 2, 1981, Ser. No. 298,580
Claims priority, application Japan, Mar. 24, 1979, 54-34938
Int. Cl.³ H05B *3/44*
U.S. Cl. 219—544 **5 Claims**

1. A ceramic heater comprising a nonoxide ceramic material selected from the group consisting of silicon nitride, sialon, aluminum nitride and silicon carbide, wherein said ceramic material is formed into an integral body by the application of pressure and heat, said heater having a thin discrete heating element embedded in said ceramic, said heat generating ele-

ment having exposed electrical terminals, said heat generating element being formed of high temperature melting-point metal



having a main component selected from the group consisting of tungsten and molybdenum.

4,357,527

PROGRAMMABLE DIVIDER

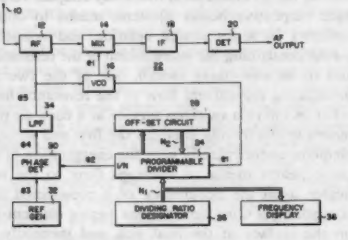
Tadashi Kojima, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 25, 1979, Ser. No. 6,490

Claims priority, application Japan, Jan. 31, 1978, 53-9775; Jan. 31, 1978, 53-9776; Jan. 31, 1978, 53-9777

Int. Cl.[3] H03K *21/36*

U.S. Cl. 235—92 DM 20 Claims



1. A programmable divider having a dividing ratio changeable by a dividing ratio designation data, comprising:

first divider means having a first dividing ratio responsive to a first signal in one dividing cycle, for dividing a second signal coupled to a signal input thereof and providing a third signal at an output thereof;

second divider means having a second dividing ratio responsive to said dividing ratio designation data, and having a signal input coupled to the output of said first divider means so as to receive the third signal therefrom, for dividing said third signal and providing at signal output thereof, fourth and fifth signals, the fifth signal being provided earlier in time than the fourth signal; and

pulse interval extender means for extending the pulse interval of an input signal corresponding to said second signal, which input signal is processed in said first divider means, the pulse interval extension of the pulse interval extender means being determined by the dividing ratio designation data, receiving said fifth signal from said second divider means to provide a timing reference, and providing said first signal to said first divider means, said first signal including pulse interval extension data which is a function of the dividing ratio designation data and which is synchronized with said fifth signal;

the first and second divider means synthesizing a dividing ratio N expressed by the equation:

$$N = \{N_L - (n-1)\} N_{HI} + \sum_{i=2}^{n} N_{Hi}$$

where N_L is a dividing ratio of said second divider means, N_{HI} is a dividing ratio of said first divider means, n is a numerical value that the dividing ratio of said first divider means may take in one dividing cycle, and i is a natural number; term

$$\sum_{i=2}^{n} N_{Hi}$$

of said equation being determined by said dividing ratio designation data and said pulse interval extender means;

the dividing ratio designation data comprising n data blocks, and the pulse interval extender means including (a) delay means for providing a sixth signal which is n−1 times delayed by one pulse behind said fifth signal and synchronized with said third signal, and (b) a data selection means for supplying a dividing data based on any one of said n data blocks to said first divider means by means of said first signal when said sixth signal is supplied to said selection means.

4,357,528

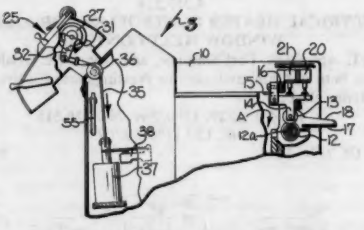
MACHINE AND METHOD FOR COUNTING AND RECONCILING PAPER MONEY

Harry B. Smith, Charlotte; Kenneth L. Robertson, Gastonia, and Robert T. Smith, Mt. Holly, all of N.C., assignors to Federal Reserve Bank of Richmond, Richmond, Va.

Filed Oct. 27, 1980, Ser. No. 201,000

Int. Cl.[3] G06F *7/38*

U.S. Cl. 235—92 SB 6 Claims



1. In a machine for counting paper money including a plurality of bill receiving compartments, bill feeding means associated with each compartment, piece counter means associated with said bill feeding means of each compartment, a totalizing counter, a header card receiving compartment, header card feeding means associated with said header card receiving compartment, and header card counter means associated with said header card feeding means, the combination therewith of means for reconciling batches of paper money initially counted by an automatic counting machine producing a batch printout sheet, said reconciling means comprising a platen supported for step-by-step rotation on said machine and adapted to receive and maintain said batch printout sheet with a line of print in alignment for view by the operator, actuating means for imparting a step in movement to said platen for advancing the next succeeding line of print on said batch printout sheet to align the same for viewing by the operator, and operating means operable by said header card feeding means for advancing said platen and batch printout sheet one step when a header card is deposited in said header card receiving compartment which follows a header card that had rejected paper money behind it.

4,357,529

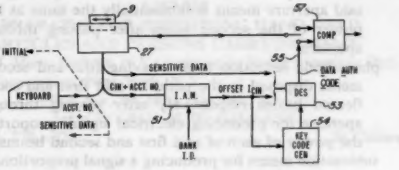
MULTILEVEL SECURITY APPARATUS AND METHOD

Martin M. Atalla, Atherton, Calif., assignor to Atalla Technovations, San Jose, Calif.

Continuation-in-part of Ser. No. 118,584, Feb. 4, 1980, Pat. No. 4,304,990, which is a continuation-in-part of Ser. No. 102,858, Dec. 11, 1979, Pat. No. 4,328,414. This application Nov. 17, 1980, Ser. No. 207,785

Int. Cl.³ G06K *7/00*

U.S. Cl. 235—380 **10 Claims**



1. The method of verifying a transaction-controlling medium having data and a unique code associated therewith, comprising the steps of:

(a) sensing the unique code associated with the medium;

(b) sensing a first portion of the data associated with the medium;

(c) encrypting the sensed unique code and sensed first portion of the data in logical combination with a first encoding key to produce a first offset code;

(d) sensing a second portion of the data associated with the medium;

(e) encrypting the first offset code and a sensed second portion of the data in logical combination with a second encoding key to produce a data authorization code; and

(f) initializing the medium by recording the data authorization code thereon for subsequent sensing thereof and comparison with a data-authorization code produced according to steps (a), (b), (c), (d) and (e) above.

4,357,530

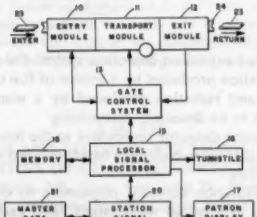
MODULARIZED TICKET HANDLING SYSTEM FOR USE IN AUTOMATIC TICKET PROCESSING SYSTEM

John B. Roes, San Diego; Guy M. Kelly, La Jolla; Robert F. Case, and Chandler R. Deming, both of San Diego, all of Calif., assignors to Cubic Western Data, San Diego, Calif.

Filed Dec. 1, 1980, Ser. No. 211,021

Int. Cl.³ G06K *7/00*

U.S. Cl. 235—384 **22 Claims**



2. A ticket handling system for use in a ticket processing system that includes transducer means for reading an encoded ticket entered by a patron and for providing a read signal in response thereto and means for subsequently passing said ticket to an exit position where said ticket is accessible for return to said patron, the ticket handling system comprising

a transport module including the transducer means for reading a said encoded ticket and for providing a said read signal in response thereto; and

a second module mechanically interfaced with the transport module and including means defining a return passage for passing said ticket from the transport module to an exit position where said ticket is accessible for return to said patron.

4,357,531

PHYSICAL HIT DETECTION SYSTEM AND TARGET APPARATUS

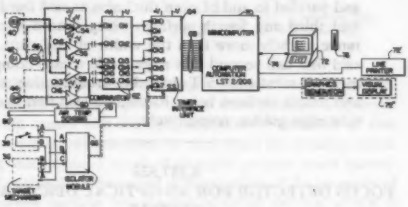
Lindsay C. Knight, Albury, Australia, assignor to Australasian Training Aids, Pty., Ltd., Albury, Australia

Filed Jan. 8, 1980, Ser. No. 110,481

Claims priority, application Australia, May 14, 1979, PD8800; United Kingdom, Jan. 8, 1979, 7900626; Mar. 8, 1979, 7908261; Apr. 4, 1979, 7911721; Jul. 24, 1979, 7925668

Int. Cl.³ G06F *15/20;* **F41J** *5/12*

U.S. Cl. 235—400 **6 Claims**



1. Apparatus for use in marksmanship training in which a projectile travels along a trajectory from a firing point toward a target member and through a measurement plane, comprising:

a target member;

first means for detecting and indicating relative to a target representation a location in said measurement plane through which said trajectory passes, thereby providing at least an approximate indication of where said projectile passes relative to said target member; and

second means for detecting and providing a positive indication of a projectile hit on said target member, said first and second means providing a marksman with at least an approximate indication of where the projectile passes relative to the target member, as well as a positive indication of whether the projectile has hit the target member, said indications rendering hits at the edge of the target member distinguishable from misses near the edge of the target member.

4,357,532

GUIDE FOR ENCODED MAGNETIC CARD FOR MACHINE ACTUATOR

Lee A. Rath, Daly City; George Sidline, Belmont, and Ilya Zhabokrug, San Francisco, all of Calif., assignors to Service Distributors, Inc., San Francisco, Calif.

Filed Nov. 10, 1980, Ser. No. 205,145

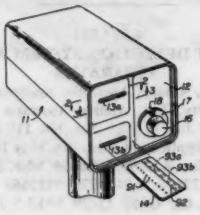
Int. Cl.³ G06K *7/01*

U.S. Cl. 235—483 **4 Claims**

1. A guide for a card feed whereby a substanially rectangular card is fed in at least one direction by card feed means for performance of functions on said card, said guide formed with a rectangular passageway to receive said card with slight clearances for the thickness and width of said card, said guide comprising:

a first member having a first flat surface facing inward of said passageway, a second member having a second flat surface facing inward of said passageway parallel to said first flat surface and spaced therefrom a distance slightly more than the thickness of said card, first side edge guide

means having a thin third flat surface facing inward of said passageway and being perpendicular to said first and second surfaces and intersecting said first and second surfaces in sharp corners, and second side edge guide means opposite said first side edge guide means having a thin fourth flat surface facing inward of said passageway



and parallel to and of even thickness as said third surface, said third and fourth surfaces being spaced apart a distance slightly more than the width of said card, each of said first and second side edge guide means comprising a member substantially T-shaped in cross-section, said third and fourth surfaces being formed on said first and second side edge guides, respectively.

4,357,533

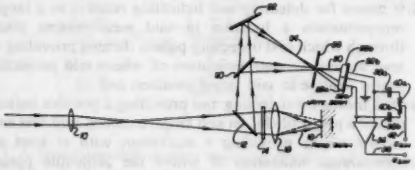
FOCUS DETECTOR FOR AN OPTICAL DISC PLAYBACK SYSTEM

John S. Winslow, Altadena, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Jul. 14, 1980, Ser. No. 168,812

Int. Cl.³ G01J 1/36

U.S. Cl. 250—204 **6 Claims**



1. An optical disc playback system for reading optically encoded information recorded in an information track on the reflective information plane of the optical disc, including an automatic imaging servo system comprising:

a laser light source for producing a linearly polarized, incident reading beam of light radiation;

an optical beam directing system for directing said incident beam from said laser source along a beam path to the information track, the incident beam being modulated and reflected by the information track to retrace at least a portion of the path of said incident beam; said optical beam directing system including:

a polarizing beam splitting prism aligned with said direction of polarization of said incident beam;

a quarter wave plate disposed between said prism and the disc for changing said linearly polarized beam into a circularly polarized incident beam;

said circularly polarized incident beam having its sense of circular polarization reversed by impact upon and reflection from the information track;

said quarter wave plate linearly polarizes said reflected beam in a plane orthogonal to said polarization plane of said incident beam;

said polarizing beam splitting prism reflects the reflected beam out of the incident beam path;

beam splitting means disposed in the path of said last reflected beam for producing first and second beams of approximately equal power;

a mirror disposed in the path of said first beam to increase its path length;

a single aperture disposed in the path of said first and second beams such that, when the original beam is imaged on the information track, said first reflected beam converges to a first focal point prior to passing through said aperture and the second reflected beam converges to a second focal point after passing through said aperture, and such that the total power of said first beam after passing through said aperture means is substantially the same as the total power of the second beam after passing through said aperture;

photodiode detection means having first and second segments disposed in the paths of said first and second reflected beams respectively after passing through said aperture for producing electrical signals proportional to the power of each of said first and second beams; and

subtraction means for producing a signal proportional to the difference between the powers of said first and second beams for indicating the magnitude and polarity of the imaging error of said incident beam.

4,357,534

FIRE AND EXPLOSION DETECTION

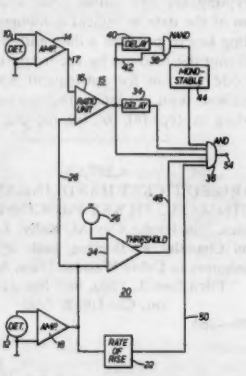
David N. Ball, Slough, England, assignor to Graviner Limited, Buckinghamshire, England

Filed Jul. 7, 1980, Ser. No. 166,560

Claims priority, application United Kingdom, Jan. 17, 1980, 8001653

Int. Cl.³ G01J 1/00

U.S. Cl. 250—339 **9 Claims**



6. A fire and explosion detection system for discriminating between radiation produced by a source of fire or explosion to be detected and radiation produced by a source of fire or explosion not to be detected, comprising

a first radiation detector responsive to the intensity of radiation in a narrow wavelength band centered substantially at 4.4 microns,

a second radiation detector responsive to the intensity of radiation in a broad wavelength band centered substantially at 4.4 microns,

a threshold unit connected to receive the output of one of the detectors and operative to produce a threshold signal in response to the intensity of radiation received by that detector exceeding a predetermined threshold,

a rate of rise unit connected to receive the output of one of the detectors and operative to produce a rate of rise signal in response to the rate of rise of the intensity of radiation received by that detector exceeding a predetermined value,

a ratio unit connected to receive the output of both detectors and operative to produce an inhibit signal in response to the intensity of radiation received by the first radiation detector being less than that received by the second radiation detector, and

a coincidence gate connected to receive the threshold signal and the rate of rise signal and responsive to the inhibit signal to produce a fire or explosion indicating output only when the threshold signal and the rate of rise signal exist together in the absence of the inhibit signal.

4,357,535

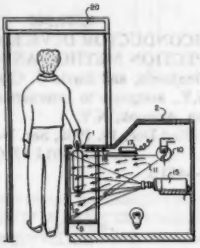
APPARATUS FOR INSPECTING HAND-HELD ARTICLES AND PERSONS CARRYING SAME

David J. Haas, Suffern, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Apr. 30, 1980, Ser. No. 145,151

Int. Cl.³ G01N *23/00*; G21F *3/02*

U.S. Cl. 378—57 **26 Claims**



1. Apparatus for inspecting an article comprising a longitudinally extending cabinet having top and bottom walls, oppositely disposed side walls, and oppositely disposed end walls; a longitudinally extending slot-like opening in said cabinet adjacent a corresponding edge of said top wall and a side wall; an entrance opening at one portion of said cabinet and an exit opening at another portion of said cabinet, said entrance opening and said exit opening connecting with said longitudinal opening so that a hand-held suspended article can be passed in said cabinet by a person holding said article outside said cabinet; means arranged within said cabinet for generating sensing radiation in a direction transversely to movement of said hand-held article; and means for detecting said radiation after passage through said article and for recording resulting information.

2. Apparatus according to claim **1**, wherein said sensing radiation-generating means comprises an X-ray generator, and said detecting means comprises an X-ray detector.

26. Apparatus according to claim **1** or **2**, wherein means are provided adjacent said cabinet for independently carrying out a predetermined metal detection of persons carrying said hand-held articles.

4,357,536

APPARATUS AND METHOD FOR MONITORING THE INTENSITIES OF CHARGED PARTICLE BEAMS

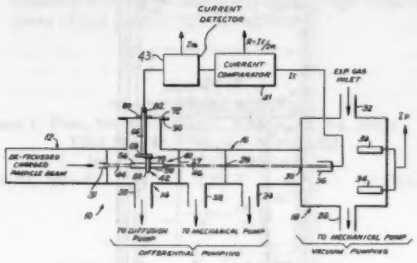
Matesh N. Varma, Mt. Sinai, and John W. Baum, Patchogue, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 16, 1981, Ser. No. 225,492

Int. Cl.³ G01K *1/08*; H01J *3/14, 3/26*

U.S. Cl. 250—397 **18 Claims**

1. Apparatus comprising means for monitoring the intensity of charged particle beams, said beam intensity monitoring means being disposable in the path of such a charged particle beam, said beam monitoring means including means for preventing the passage of a constant cross-sectional portion of such charged particle beam through said beam monitoring means and for concomitantly permitting the passage of the remaining cross-sectional portion of the charged particle beam through said beam monitoring means without change, said beam monitoring means also including means for providing a signal which is indicative of the intensity of the charged particle beam cross-sectional portion which is prevented from passing therethrough; whereby, the provision of a signal indicative of the intensity of the charged particle beam cross-sectional portion which is permitted to pass through said beam monitoring means and the determination of the ratio of that signal to said signal provided by said beam monitoring means over a predetermined range of charged particle beam intensities will enable the subsequent determination of the intensity of said charged particle beam cross-sectional portion which is permitted to pass through said beam monitoring means by determination of said beam monitoring means signal.



4,357,537

X-RAY DIAGNOSTIC GENERATOR COMPRISING RADIATION SHIELDING SURROUNDING THE X-RAY TUBE

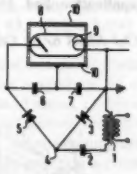
Manfred Rattner, Buckenhof, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 12, 1980, Ser. No. 206,269

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950818

Int. Cl.³ H05G *1/12*

U.S. Cl. 378—103 **1 Claim**



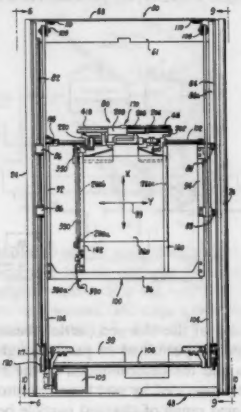
1. An x-ray diagnostic generator comprising a high voltage rectifier, high voltage capacitor means connected to the rectifier output, and radiation shielding surrounding the x-ray tube, said high voltage capacitor means comprising two individual capacitors (**6**, **7**) having a connection line connecting said capacitors in series relative to one another, the radiation shielding (**10**) being connected with the connection line connecting the two individual capacitors (**6**, **7**), in an electrically ungrounded fashion, and the cathode (**9**) of the x-ray tube (**8**) being connected to ground.

4,357,538

SPOTFILMING APPARATUS AND METHOD

Robert P. Hunt, Chesterland; John D. Geither, Wickliffe, and Victor J. Hrdlicka, Mayfield Heights, all of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed Nov. 24, 1980, Ser. No. 209,740
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—175 23 Claims



21. A method of operating a spotfilmer, comprising the steps of:

(a) providing a carriage assembly including a pair of transversely movable clamp members;

(b) driving said carriage assembly to a cassette receiving position;

(c) driving one of said clamp members to a cassette receiving position within said carriage assembly;

(d) driving the one clamp member towards the other clamp member, after a film cassette has been inserted, until said cassette is clamped between said clamp members;

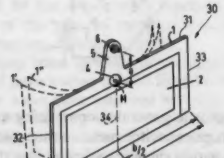
(e) interconnecting said clamp members so that driving the one clamp member causes concurrent motion in said second clamp member.

4,357,539

FLEXIBLE FILM CASSETTE

Ernst O. Fleer; Werner Günther, and Manfred Muether, all of Bensheim, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 15, 1981, Ser. No. 225,329
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004777
Int. Cl.³ A61B *6/14*; G03B *41/18*
U.S. Cl. 378—170 12 Claims



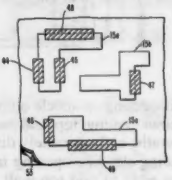
1. In a flexible film cassette for receiving a dental x-ray film and supporting the film outside of a patient's mouth, said cassette being used with an x-ray diagnostic device which has an x-ray tube which is mounted in a housing and has an applicator projecting from the tube and the housing which is capable of being inserted into the patient's mouth, said film cassette on a periphery being provided with first support means at least partially surrounding the applicator and forming a receiving opening for the mounting of the film cassette on the applicator, the improvement comprising second support means for positively coupling the cassette to the applicator being positioned at an interval from the center of the receiving opening of the first support means, said second support means preventing rotation of the film cassette about the symmetrical axis of the applicator.

4,357,540

SEMICONDUCTOR DEVICE ARRAY MASK INSPECTION METHOD AND APPARATUS

Charles E. Benjamin, and David J. Crawford, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,322
Int. Cl.³ H01J *37/00*
U.S. Cl. 250—491.1 10 Claims



1. A method of inspecting a patterned mask comprising the steps of:

placing a patterned mask to be inspected in an inspection apparatus,

said mask being provided with a multiplicity of patterns on a surface thereon,

directing a beam to scan a first selected region overlying a portion of a selected first pattern on said mask,

measuring the information received from said first region,

comparing the measured information against the information used to create said mask and using the compared information to align said mask to a first predetermined position,

directing the beam to scan the entire selected pattern,

measuring the information received from said entire first selected pattern,

comparing said received information to the information used to create said mask to detect errors in said selected pattern,

moving said mask to a different position,

directing the beam to scan a second selected region overlying a portion of a selected second pattern on said mask,

comparing the measured information against the information used to create said mask and using the compared information to align said mask to a second predetermined position,

directing the beam to scan the entire second selected pattern,

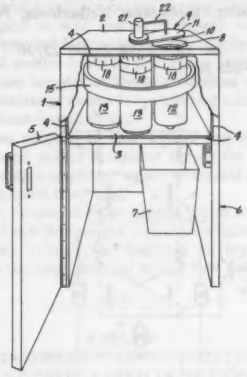
measuring the information received from said entire second selected pattern, and

comparing said received information from said second pattern to the information used to create said mask to detect errors in said second selected pattern.

4,357,541
APPARATUS FOR THE TEMPORARY RECEPTION OF RADIOACTIVE WASTE

Max Ernst, Schlossstrasse 125, 3008 Bern, Switzerland

Filed Jul. 1, 1980, Ser. No. 165,225
Claims priority, application Switzerland, Jul. 3, 1979, 6219/79
Int. Cl.³ G21F 5/00
U.S. Cl. 250—507.1 7 Claims

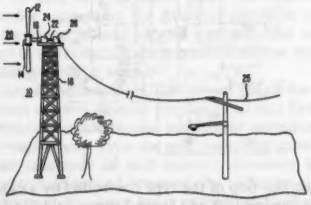


1. An apparatus for the temporary radiation protected reception of radioactive waste of relatively short half-life, characterized by the fact that a plurality of tubes, each adapted to receive a bag which can be inserted therein, are arranged vertically in a closed row in a completely enclosed housing provided with a radiation-protection jacket, said tubes being turnable as an assembled unit around a vertical axis and a bottom plate of the housing preventing the bags from falling out of the tubes, and by the fact that a top cover plate and the bottom plate of the housing are each provided with an opening which corresponds to the cross-sectional area of the tubes, the opening of the top plate being adapted to be closed by a radiation-protection lid while a reception container for the bags is adapted to be placed below the opening of the bottom plate, the said openings being offset with respect to each other, in the direction of rotation of the unit in such a manner that in each case the first one of the tubes lying in a row is below the opening of the top plate and the last tube in the direction of rotation is above the opening in the bottom plate.

4,357,542
WIND TURBINE GENERATOR SYSTEM

Herbert S. Kirschbaum, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 12, 1979, Ser. No. 57,055
Int. Cl.³ F03D 11/00; H02H 7/06
U.S. Cl. 290—44 1 Claim



1. Apparatus for controlling the transfer of electrical energy from a multi-speed pole amplitude modulated type dynamo electric machine powered by a wind machine generating alternating current to a primary electrical circuit comprising:

a. an electrical conduit between said dynamo electric machine and said circuit;

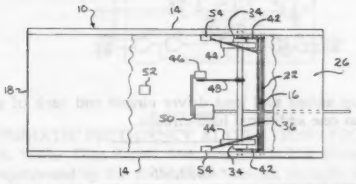
b. a breaker for selectively opening and closing the flow of electrical energy through said conduit; and

c. a current limiting reactor and associated means for connecting said reactor in series with said conduit during a transition from a low rotational speed to a high rotational speed of said dynamo electric machine.

4,357,543
WAVE-MOTOR SYSTEM

James F. Penn, 560 Carolina Ave., Chester, W. Va. 26034

Filed Nov. 21, 1980, Ser. No. 208,991
Int. Cl.³ C25B 1/04; F03B 13/12
U.S. Cl. 290—53 13 Claims



1. A machine for converting energy of sea waves to useful work comprising: flotation means, an energy conversion device having an impact vane positioned generally above the surface of the low point of the waves and a discharge to the water surface, said device being actuated by water impacting on said vane and forcing it down to the surface of the water on the discharge side of said device, a ramp carried by said flotation means and constructed and arranged to convert waves into breakers, and means for raising and lowering said flotation means in the water to cause the water in approximately the top half of the breakers to be moving generally horizontally forward at the time they impact against said vane of said energy conversion device.

4,357,544
VARIABLE IMPEDANCE CIRCUIT

Klaus D. May, York, Pa., and Dana L. Eckstein, Ellicott City, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,097
Int. Cl.³ H02M 3/145
U.S. Cl. 307—34 9 Claims

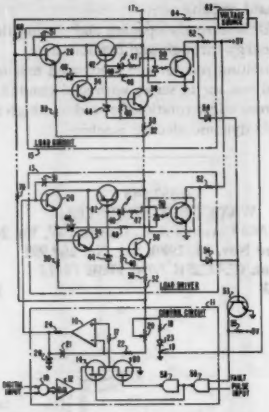
1. A variable impedance circuit for loading a voltage source to a desired current, the magnitude of said desired current being specified by a demand signal, comprising in combination:

(a) a control circuit for sensing the current loading of said voltage source and for comparing said sensed current to said demand signal to generate a control signal; said control circuit also including an optical isolator providing electrical isolation between said demand signal and the remainder of said variable impedance circuit

(b) a load driver circuit responsive to said control signal to adjust the current through said load driver circuit to the value specified by said demand signal;

(c) at least one load circuit series coupled with said load driver circuit, said at least one load circuit being responsive to the voltage drop across the series combination of said load driver circuit and said at least one additional load circuit to provide a current through the series combination of said load driver circuit and said at least one load

circuit substantially equal to the current specified by said current demand signal, and a substantially equal voltage



drop across said load driver circuit and each of said at least one additional load circuits.

4,357,545

REMOTE POWER SUPPLY SYSTEM FOR EQUIPMENT ON A TRANSMISSION LINE

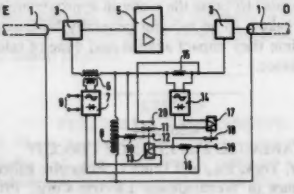
Yves Le Grand, Trappes, and Rene Migeon, Paris, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Oct. 27, 1980, Ser. No. 200,625

Claims priority, application France, Oct. 26, 1979, 79 26614

Int. Cl.³ H04B *3/44*

U.S. Cl. 307—64 10 Claims



1. A remote power supply system for powering remote equipment located at a point along a transmission line, said transmission line being equipped with a remote power supply loop which passes through said point and which loops through a source of electrical energy, the system including at said point:

a first control switch;

a looping impedance connected in series with the first controlled switch, means connecting said series connection of switch and impedance in shunt across the remote supply loop, thereby dividing the remote supply loop into two partial loops, one of which includes the source of energy;

two local power supply circuits within the remote supply loop, one on either side of the looping impedance, a first one of said local power supply circuits being within the partial loop that includes the source of energy and serving to supply power to the equipment in normal operation, the other, second local power supply circuit being within the other partial loop; and

a control circuit for said first controlled switch, the control circuit including means sensitive to the state of operation of each of the local power supply circuits and including means for closing the first controlled switch when the first local power supply circuit is not in operation and for opening the first controlled switch when both local power circuits are operating simultaneously.

4,357,546

INTEGRATED FREQUENCY DIVIDER CIRCUIT

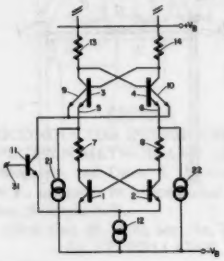
George A. Govaert, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 18, 1980, Ser. No. 208,096

Claims priority, application Netherlands, Nov. 19, 1979, 7908412

Int. Cl.³ H03K *29/00, 23/30*

U.S. Cl. 307—225 R 6 Claims



1. A frequency divider circuit comprising a first and a second transistor pair, the base of the one transistor of each transistor pair being coupled to the collector of the other transistor and the collector of the one transistor being coupled to the base of the other transistor and the transistors of the second transistor pair each being provided with an emitter and an auxiliary emitter, characterized in that the collector of the one transistor of the first transistor pair is coupled to the emitter of the one transistor of the second transistor pair via a first resistor, that the collector of the other transistor of the first transistor pair is coupled to the emitter of the other transistor of the second transistor pair via a second resistor, that between the collectors of the second transistor pair and a first point of fixed potential impedances are included, which impedances suitably include a third and a fourth resistor respectively, and that the auxiliary emitters of the second transistor pair are connected to a first input for applying a first signal whose frequency is to be divided.

4,357,547

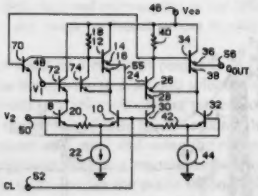
EFL TOGGLE FLIP-FLOP

Roy H. Espe, Scottsdale, and W. Eric Main, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 23, 1981, Ser. No. 237,322

Int. Cl.³ H03K *3/289*

U.S. Cl. 307—272 A 8 Claims



1. A toggle flip-flop of the type controlled by a clock signal capable of assuming first and second states, said flip-flop comprising:

a master circuit portion including:

first output transistor means having a collector terminal

coupled to a source of supply voltage and having first and second emitter terminals and a base terminal; and

first means coupled to said first emitter terminal of said first output transistor means for latching said first output transistor means when said clock signal is in said first state;

a slave circuit portion having an input coupled to said second emitter terminal of said first output transistor means for producing a Q output of said flip-flop, said slave circuit portion comprising:

second output transistor means having a collector terminal coupled to said source of supply voltage, a first emitter terminal for producing said Q output and having a second emitter terminal and a base terminal;

second means coupled to the base terminal of said second output transistor means for producing a driving voltage on said base terminal; and

third means coupled to said second emitter terminal of said second output transistor means for latching said second output transistor means when said clock signal is in said second state; and

fourth means coupled to said second means and to the base terminal of said first output transistor means for inverting said driving voltage and applying an inverted driving voltage to the base terminal of said first output transistor means.

4,357,548

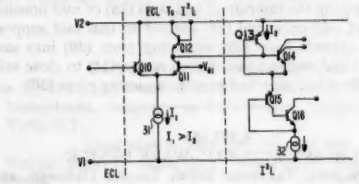
CIRCUIT ARRANGEMENT USING EMITTER COUPLED LOGIC AND INTEGRATED INJECTION LOGIC

Donald R. Preslar, Plainfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 30, 1980, Ser. No. 155,998

Int. Cl.³ H03K *19/092, 19/086, 19/091*

U.S. Cl. 307—475 **7 Claims**



1. A circuit arrangement comprising:

first and second terminals for receiving an operating potential therebetween;

an ECL circuit including first current source means for providing a first current directly connected to said first terminal, first and second transistors connected as an emitter coupled differential amplifier for switching said first current through one of the collector-emitter paths of said first and second transistors, the base electrodes of said first and second transistors being arranged for receiving a differential input potential corresponding to an ECL signal, load means connected between the collector electrode of said first transistor and said second terminal, means for connecting the collector electrode of said second transistor to said second terminal, and means connected to the collector electrode of said first transistor for providing an ECL signal;

an I^2L circuit including second current means for providing a second current directly connected to said first terminal, a switching transistor, and an injector transistor of opposite conductivity type to said switching transistor, the emitter electrode of said injector transistor being connected to said second terminal, the collector electrode of said injector transistor being connected to the base electrode of said switching transistor and being arranged to receive an input potential corresponding to an I^2L signal, the base electrode of said injector transistor being connected to said second current source, the collector of said switching transistor providing an I^2L signal; and

interface means for coupling signals between said ECL circuit and said I^2L circuit including an interface circuit for translating ECL signal levels to I^2L signal levels, said interface circuit including third current source means for providing a third current directly connected to said first terminal, third and fourth transistors being connected as an emitter coupled differential amplifier for switching the current provided by said third current source through one of the collector-emitter paths of said third and fourth transistors, the base electrode of one of said third and fourth transistors being connected to the collector electrode of said first transistor of said ECL circuit, the collector electrodes of said third and fourth transistors connected to said second terminal, the collector electrode of one of said third and fourth transistors being connected to the base electrode of said switching transistor of said I^2L circuit.

4,357,549

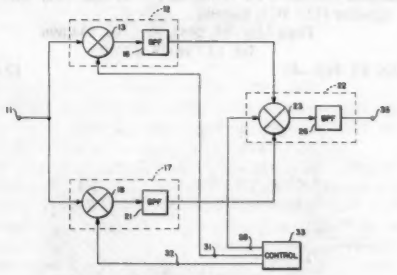
AUTOMATIC FREQUENCY ALTERATION CIRCUIT

Kelly A. Miller, Glen Burnie, Md., assignor to U.S. Government as represented by the director of National Security Agency, Washington, D.C.

Filed Dec. 2, 1980, Ser. No. 212,061

Int. Cl.³ H03L *7/06*

U.S. Cl. 307—523 **7 Claims**



1. An electrical circuit, comprising:

an input to which is applied one of a plurality of input signals;

means for providing a plurality of control signals;

a plurality of first order units, each including

(1) multiplier means connected to said input and one of said control signals for generating first order intermediate signals equal to the albegraic sum and difference of said input signal and a selected one of said control signals and

(2) filter means for passing a selected one of said first order intermediate signals; and

at least one second order unit including

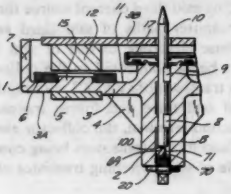
(1) multiplier means connected to said plurality of first order units for generating second order intermediate signals equal to the algebraic sum and difference of said selected first order intermediate signal and a selected one of said control signals and

(2) filter means for passing a selected one of said second order intermediate signals.

4,357,550
BRUSHLESS D.C. MOTOR

Siegfried Müller, Bühlstr. 14 a, D 7742 St. Georgen, Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 111,991
Claims priority, application Switzerland, Jan. 16, 1979, 401/79
Int. Cl.³ H02K *1/04*
U.S. Cl. 310—43 10 Claims

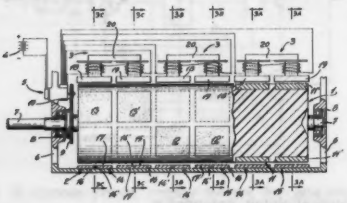


1. In a commutatorless D.C. motor with a plane air gap and a rotor shaft, particularly for use as a direct drive of signal-processing recording and/or reproducing devices, an improvement comprising a plastic motor housing having a bore extending perpendicular to the plane of the air gap, said rotor shaft being received in said bore, said bore being shaped so as to form at least two bearing surfaces supporting the rotor shaft and to further form spaces between the rotor shaft and the housing, said spaces containing lubricant; and a thrust bearing located at a lower end of the bore and supporting a lower end of the rotor shaft.

4,357,551
D.C. IMPULSION MOTOR

Jacques Dulondel, 50 Willowdale Ave.-Apt. 701, Outremont, Quebec H3T 1G1, Canada

Filed Mar. 16, 1981, Ser. No. 244,096
Int. Cl.³ H02K *47/00*
U.S. Cl. 310—46 12 Claims

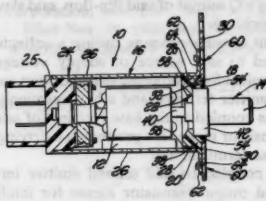


1. A d.c. impulsion motor comprising a stator including permanent magnet means having one polarity spread over at least one distinct polarity portion progressively varying in effective cross-sectional size in one circumferential direction around the stator a rotor including permanent magnet means having one permanent rotor magnet extending over a predetermined angular portion thereof, in adjacent and reactive path relationship relative to said one distinct polarity portion of said permanent magnet means, a uniform air gap being provided between the permanent magnet means of said stator and rotor, respectively, electromagnet means secured to the stator in circumferential continuity with said permanent magnet means and positioned in adjacent and reactive relationship relative to said one permanent rotor magnet, a d.c. power supply, and a d.c. power distributor connected to the d.c. powersupply and to the electromagnet means and constructed and arranged for synchronized energization of the latter upon passage of said one permanent rotor magnet in angular registry with said electromagnet means.

4,357,552
MOTOR ASSEMBLY

Robert E. MacMillan, Andover, Mass., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Mar. 31, 1980, Ser. No. 135,840
Int. Cl.³ H02K *5/16*
U.S. Cl. 310—90 11 Claims

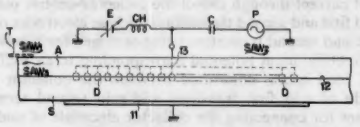


1. A motor assembly (10) comprising: a motor (12); driven means (14) extending from said motor (12); casing means (16) for encasing said motor (12) including a housing (24) having a wall (26) disposed about said motor (12) and having an open end (28), said casing means (16) including a mounting plate (30) adapted for mounting to a support structure and extending over said open end (28) of said housing (24) and attached to said housing (24), said mounting plate (30) including an opening (18) therein, said driven means (14) extending through said opening (18); and resilient support means (20) molded about portions of said mounting plate (30) in said opening (18) so that portions of said mounting plate (30) are embedded in said support means (20) for mechanical interlocking engagement therewith, said resilient support means (20) having a passageway (22) therethrough engaging and supporting said driven means (14), said support means (20) including an outer periphery (38) engaging the interior of said wall (26) of said housing (24) adjacent said open end (28) thereof so that said support means (20) extends from said mounting plate (30) into said housing (24) and engages said driven means (14) to close said open end (28) while attached to said mounting plate (30).

4,357,553
SURFACE-ACOUSTIC-WAVE DEVICE

Shoichi Minagawa; Takamasa Sakai; Takeshi Okamoto, and Morihiro Niimi, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1980, Ser. No. 177,966
Claims priority, application Japan, Aug. 14, 1979, 54/102777; Aug. 15, 1979, 54/103097; Aug. 16, 1979, 54/103573
Int. Cl.³ H03F *7/00*
U.S. Cl. 310—313 B 17 Claims



1. A surface-acoustic-wave device which comprises:
a laminate of a semiconducting material and a piezoelectric material;
means for propagating a surface-acoustic-wave through said piezoelectric material;
depletion layer control means locally provided at an interface of said semiconducting material and said piezoelectric material; and
means for applying a DC bias voltage and an AC pumping voltage between said depletion layer control means and a location on said semiconducting material spaced from said

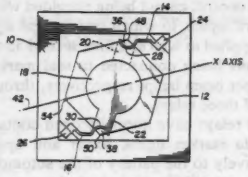
depletion layer control means, to cause a parametric interaction, between said surface-acoustic-wave propagated through said piezoelectric material and said pumping voltage, at a region or regions other than a region where said depletion layer control means is provided.

4,357,554

HEXAGONAL QUARTZ RESONATOR

Roswell D. M. Peters, Rustburg, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 21, 1980, Ser. No. 151,868
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—367 **10 Claims**



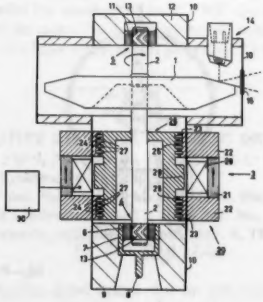
1. A plate-like resonator of piezoelectric material having a predetermined crystallographic orientation defined by at least one crystallographic axis, wherein said resonator comprises a substantially equilateral hexagon and wherein said crystallographic axis passes through one set of corners of said hexagon and said resonator includes mounting regions existing at mutually adjacent corners along a mounting axis having a $\pm 60°$ angular orientation with respect to said crystallographic axis for producing a predetermined desired effect upon the resonant frequency of said mounted resonator.

4,357,555

ROTARY ANODE X-RAY TUBE

Jan Gerkema, and Evert M. H. Kamerbeek, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1980, Ser. No. 147,885
Claims priority, application Netherlands, May 8, 1979, 7903580
Int. Cl.³ H01J *35/04*
U.S. Cl. 378—135 **10 Claims**



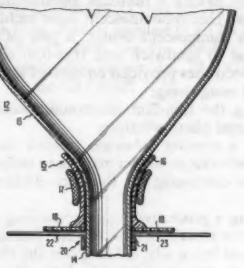
1. An X-ray tube comprising:
an envelope;
a rotary anode in the envelope, said anode being rotatable around an axis and being axially and radially supported on the axis by a bearing system;
a motor stator outside the envelope; and
a motor rotor attached to the rotary anode for rotating the rotary anode on the axis in cooperation with the motor stator;
characterized in that the bearing system comprises:
a magnetic bearing for supporting the rotary anode axially; and
at least one sleeve bearing for supporting the rotary anode radially, said sleeve bearing comprising cooperating metal supporting faces separated by a liquid layer of a metal or metal alloy which wets the supporting faces without substantially attacking the supporting faces, said metal alloy having a vapor pressure below 10^{-5} N/m² at 300° C.

4,357,556

TELEVISION DISPLAY SYSTEM EMPLOYING PERMEABLE CORRECTORS FOR A DEFLECTION YOKE

Thomas P. Burke, Millersville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,204
Int. Cl.³ H01J *29/76*; H01F *3/12*
U.S. Cl. 313—440 **9 Claims**



1. A color television display system comprising:
a kinescope incorporating a display screen and a neck and having an electron gun assembly within said neck for producing three horizontal in-line electron beams;
a deflection yoke mounted on said kinescope neck and comprising a magnetically permeable core and horizontal and vertical deflection coils disposed adjacent said core, each of said coils producing a main deflection field and an external field, said yoke providing deflection of said electron beams for producing rasters on said display screen;
first and second field forming means disposed at the rear of the yoke on opposite sides of the vertical axis through said kinescope neck, said first and second field forming means each comprising an upper magnetically permeable member disposed above the horizontal axis through said kinescope neck and a lower magnetically permeable member disposed below the horizontal axis through said kinescope neck, each of said members consisting of an elongated first portion disposed substantially perpendicular to the longitudinal axis of said kinescope neck and extending from the vicinity of said neck horizontally outwardly therefrom and a second portion, coupled to said first portion and disposed substantially parallel to the longitudinal axis of said neck, the vertical dimension of each of said portions being a small fraction of the diameter of said kinescope neck, said members disposed within said external fields of said horizontal and vertical coils, said first portions channelling the flux from said vertical coil external field to said second portions to form respective correcting magnetic fields between the upper members of said first and second field forming means and between the lower members of said first and second field forming means.

4,357,557

GLASS SEALED THIN-FILM ELECTROLUMINESCENT DISPLAY PANEL FREE OF MOISTURE AND THE FABRICATION METHOD THEREOF

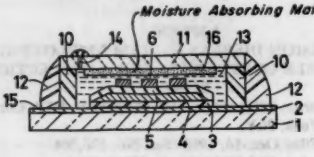
Akio Inohara, Osaka; Kiyoshi Sawae; Masashi Kawaguchi, both of Nara, and Kinichi Isaka, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 14, 1980, Ser. No. 130,347

Claims priority, application Japan, Mar. 16, 1979, 54-32162; Sep. 26, 1979, 54-124330; Sep. 29, 1979, 54-127111; Dec. 27, 1979, 54-170851

Int. Cl.³ H01J 1/62

U.S. Cl. 313—509 28 Claims



1. A method for fabricating a thin-film electroluminescent display panel having a thin-film electroluminescent element comprising an electroluminescent layer including an impurity serving as a luminescent center, a pair of dielectric layers formed so as to sandwich said thin-film electroluminescent layer, and electrodes provided on each of said dielectric layers said method comprising:

positioning the thin-film electroluminescent element on a transparent plane substrate;

disposing a counter substrate relative to the transparent plane substrate in such a manner to define a cavity therebetween containing the thin-film electroluminescent element;

introducing a protective liquid containing agents dispersed therein for absorbing moisture into said cavity, the protective liquid being adapted to cover the thin-film electroluminescent element and to penetrate into pin holes present in the dielectric layers; and

forming at least one bubble within said protective liquid which bubble functions to compensate for the cubic expansion of said panel due to an increase in temperature.

4,357,558

AUTOMATIC CONTROL DEVICE FOR LIGHTING AND EXTINCTION OF HEADLAMPS IN A VEHICLE

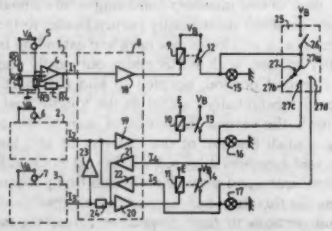
François Massoni, 95, avenue de la Lanterne, 06200 Nice, France; Filippe Canarelli, 24 via Garibaldi, Vintimille, Italy, and Françoise Fellrath, 4, avenue Primerose, 06200 Nice, France.

Filed Nov. 5, 1980, Ser. No. 204,141

Claims priority, application France, Nov. 7, 1979, 79 27461; Oct. 23, 1980, 80 22699

Int. Cl.³ B60Q 1/02

U.S. Cl. 315—83 10 Claims



1. An automatic control system for the lighting and extinction of the headlamps in an automotive vehicle of the type comprising at least two photo-sensitive elements, respectively connected to two control circuits to define luminosity thresholds and to produce control signals as a function of the ambient luminosity, as well as a logic control circuit having inputs receiving at least said control signals and outputs connected at least to the lower and upper beam lamps, and comprising moreover:

a third photo-sensitive element connected to a third control circuit;

said third control circuit defining at least one luminosity threshold and producing, as a function of the ambient luminosity, a control signal acting through the intermediary of said logic control circuit upon the side marker lights of the automotive vehicle;

said logic control circuit being provided with a first, second and third inputs, to which said control signals are respectively applied as well as a first, second and a third outputs;

said outputs being connected to said marker lights, lower and upper beam lamps respectively, through the intermediary of three relays;

said three relays have normally open contacts and connect said side marker lights, lower and upper beam lamps respectively to the battery of the automotive vehicle;

a manual control means to which the control device is connected in parallel connection, such manual control means consisting of a switch mounted in a series connection with the vehicle battery and of a three position selector, the common point of said switch with said selector being connected to the side marker lights, and the first, second and third positions of said selector being connected to the side marker lights and the lower and upper beam lamps respectively;

whereby totally automatic operation is obtained when said switch is open and said selector is in its first position; manual operation is obtained when said switch is closed; and a semi-manual operation is obtained when said switch is open and said selector is in the second or third position.

4,357,559

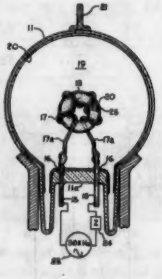
FLUORESCENT LAMP UTILIZING PHOSPHOR COMBINATION

William W. Piper, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,997

Int. Cl.³ H05B 41/16, 41/24

U.S. Cl. 315—248 8 Claims



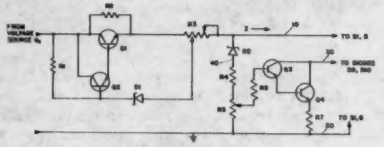
1. In a high pressure mercury vapor type fluorescent lamp having an evacuable light transmissive envelope coated with phosphor, a gaseous medium containing mercury vapor within said envelope which can be excited by an electromagnetic field at a very high discharge power density to produce a mercury vapor pressure in excess of 7 millitorr and emit ultraviolet radiation as well as visible radiation of an overall blue color,

said visible radiation constituting at least 25% of the total visible lamp emission, the improvement which comprises using a blended mixture comprising a europium activated rare earth oxide phosphor with a second phosphor having a narrow principal emission band with a mean wavelength in the green portion of the spectrum between the wavelengths of 525 and 570 nanometers, said phosphor combination producing composite lamp emission of a white color when exposed directly to said gaseous medium.

4,357,560
WEB TRANSPORT CONTROL CIRCUIT

Way D. Woo, Lincoln, and William Steddom, Peabody, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Jun. 30, 1980, Ser. No. 164,483
Int. Cl.³ B65H *77/00*
U.S. Cl. 318—7 **10 Claims**



1. Improved apparatus for controlling the transport of a web between two spools, of the type including a driving spool, rotated by a driving motor, and a driven spool, to which a drag is applied by a driven motor, and means for energizing the motors, wherein the web is transported from the driven spool to the driving spool, in which the improvement comprises improved apparatus for controlling the angular speed of the spool rotations comprising:

means for detecting a back electromotive force ("back EMF signal") produced by the driving motor during rotation of the driving spool;

further detecting means for detecting a back EMF signal produced by the driven motor during rotation of the driven spool;

a feedback signal path containing a resistor and diode in parallel for routing the back EMF signal produced by the driving motor back to that motor, wherein the diode blocks the back EMF signal produced by the driving motor; and

a further feedback signal path containing a resistor and diode in parallel for routing the back EMF signal produced by the driven motor back to that motor, wherein the diode passes the back EMF signal produced by the driven motor.

4,357,561
AUTOMOTIVE RIM ROLL FORMING DRIVE SYSTEM

Vernon R. Fencl, Northbrook, Ill., assignor to Grotnes Metalforming Systems, Inc., Chicago, Ill.

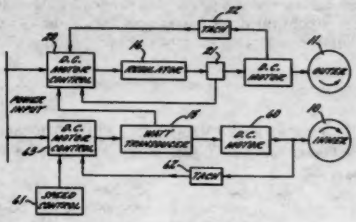
Division of Ser. No. 129,725, Mar. 27, 1980, Pat. No. 4,320,327.
This application Sep. 11, 1981, Ser. No. 301,394
Claims priority, application Japan, Apr. 6, 1979, 54-42349
Int. Cl.³ B21B *37/00*
U.S. Cl. 318—50 **1 Claim**

1. An electric drive system for an automotive wheel rim forming system having inner and outer forming rolls mounted on driven spindles, said drive system comprising

a pair of d-c. motors each driving one of said spindles;

means for maintaining a predetermined speed ratio between said inner and outer spindles in the absence of a working load thereon, said speed ratio-maintaining means including means for regulating the armature current supplied to said d-c. motors to control the speeds of said motors;

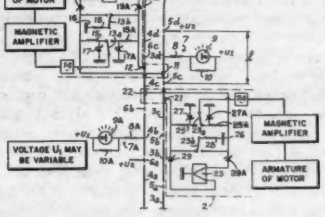
means for generating a signal representing the magnitude of the armature current applied to one of said motors, and control means responsive to said signal for varying the armature current supplied to the other of said motors so as to maintain a predetermined torque ratio between the outputs of said d-c. motors during variations in the loads on said forming rolls.



4,357,562
DEVICE FOR AUTOMATICALLY SELECTING THE SPEED OF A SELF-PROPELLING MOVING BODY

Gilbert Strouk, Le Pecq, France, assignor to FATA S.A., France

Filed Jul. 14, 1980, Ser. No. 168,474
Claims priority, application France, Jul. 23, 1979, 79 18946
Int. Cl.³ B60T *7/18*
U.S. Cl. 318—135 **6 Claims**



1. A device for automatically selecting the speed between a low speed and a high speed of a self-propelling moving body circulating on a guide as a function of the presence or absence of a moving body preceding it on the guide within a predetermined distance, said device comprising:

two electrically conducting control lines extending along the guide, each being divided into sections of length equal at the most to double the predetermined distance, the sections of one being placed in staggered relationship with respect to the sections of the other, the stagger being equal to said length,

first means for taking each of said sections to a determined potential,

portions of conductors of short length with respect to that of the sections interposed on each line between two consecutive sections,

second means for taking said portions of conductor to a determined potential substantially higher than the potential of said sections, and

a device for exploiting the potentials of said control lines fast with the self-propelling moving body comprising two contacts sliding on each of the control lines which are firstly connected to a bistable relay for controlling two contacts and secondly connected to the input of a device

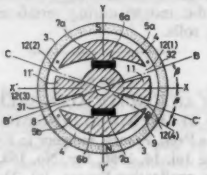
for controlling the speed of the self-propelling body for one of them and short-circuiting for the other, by means of said contacts for a first state of the relay, the electrical connection of the sliding contacts being reversed for a second state of the relay, the change of state of the relay being controlled on passage of one or the other of the sliding contacts on each of the said portions of conductors.

4,357,563

DIRECT CURRENT BRUSHLESS ELECTRIC MOTOR

Osamu Ohno, Katsuta, Japan, assignor to Japan Servo Co., Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,176
Claims priority, application Japan, Feb. 6, 1981, 56-15613
Int. Cl.³ H02K *29/02*
U.S. Cl. 318—254 **1 Claim**



1. The DC brushless electric motor which is characterized in being equipped with (a) the rotor consists of the permanent magnet of a hollow cylindrical shape with its semicircle magnetized as N pole while the remaining semicircle magnetized as S pole and the revolving hub which supports the aforesaid permanent magnet permitting it to revolve freely, (b) the stator consists of the stator yoke of a cylindrical shape, two stator magnetic poles which are planted radially on the outer periphery of the stator yoke as if to divide the outer periphery in two parts, the pole shoes which are mounted on the top part of each stator magnetic pole so as to have the outer peripheral surface of their top ends oppose the inner peripheral surface of the aforesaid permanent magnet across a small gap, and the intermediary magnetic poles which are planted redially on the outer periphery of the aforesaid stator yoke so as to position themselves between the above pole shoes, (c) with the aforesaid stator magnetic poles being wound around with stator windings and the length of the magnetic flux gap between the outer peripheral surface of the aforesaid intermediary magnetic poles and the inner peripheral surface of the permanent magnet being almost equal to the length of the magnetic flux between the outer peripheral surface of the aforesaid pole shoes and the inner peripheral surface of the permanent magnet, (d) one magnetism detector which is mounted at the position within the magnetic flux located at the point slightly deviated toward the pole shoe side from the center line connecting the center of the peripheral direction gap between the top end of the pole shoe and the top end of the intermediary magnetic pole, and (e) the current control circuit which drives and controls the revolution of the rotor in the designed direction by controlling the current which it allows to flow to each stator winding upon receiving the output of the above magnetism detector.

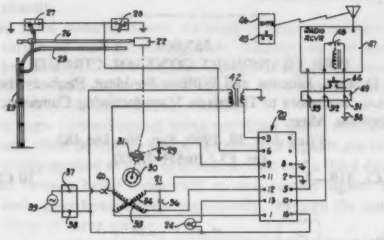
4,357,564

CLOSURE OPERATOR CONTROL

Andrew F. Deming, Alliance, Ohio, and Ronald C. Todd, Gibsonia, Pa., assignors to The Alliance Manufacturing Company, Alliance, Ohio

Filed Apr. 9, 1979, Ser. No. 27,998
Int. Cl.³ H02P *1/22, 3/20*
U.S. Cl. 318—280 **19 Claims**

4. A control circuit, comprising, in combination,
an electric motor connectable to drive a load in first and second opposite directions toward first and second limit positions, respectively,
electrical terminals connectable to an electrical power source,
a power circuit connected to said motor and to said terminals for energization of said motor to drive said load in said first and second directions,
a manual switch,



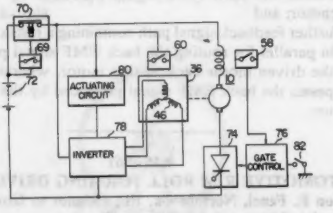
first control means operable with the load at rest in said second position and interconnecting said switch and said power circuit and responsive to a first pattern of actuation of said switch to establish said motor operational to move the load in said first direction, and
second control means operable with the load at rest in said first position and interconnecting said switch and said power circuit and responsive to a second pattern of actuation of said switch to establish said motor operational to move the load in said second direction.

4,357,565

CONTROL APPARATUS FOR VARIABLE-SPEED REVERSIBLE MOTOR

Shigeki Saito, Katsuta; Osamu Koizumi, Ibarakimachi, and Syoichi Kawamata, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 327,192
Claims priority, application Japan, Dec. 5, 1980, 55-170939
Int. Cl.³ G05B *5/00*
U.S. Cl. 318—473 **6 Claims**



1. An apparatus for controlling a variable-speed reversible motor arrangement comprising:
a variable-speed reversible main motor for driving a load;
a subsidiary motor for driving a fan, said subsidiary motor being disposed in coaxial relation with the rotor shaft of said main motor and making controlled rotation independently of the rotation of said main motor;
temperature sensor means for sensing a temperature of said main motor, said sensor means generating a first output signal when the temperature of said main motor exceeds a first predetermined level, a second output signal when the temperature of said main motor exceeds a second predetermined level higher than said first predetermined level and a third output signal when the temperature of said

main motor drops to a level lower than said first predetermined level; and

control means electrically connected to said temperature sensor means for energizing said subsidiary motor in response to said first output signal, deenergizing said main motor in response to said second output signal and deenergizing said subsidiary motor in response to said third output signal.

4,357,566

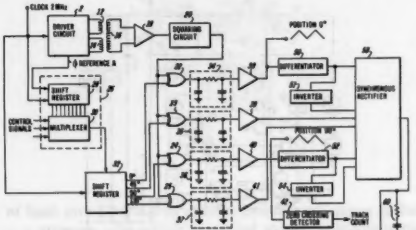
TRANSDUCER SYSTEM WITH VELOCITY SIGNAL GENERATION

Wilbur E. DuVall, Victorville, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 15, 1980, Ser. No. 187,266

Int. Cl.³ G05B *21/02*

U.S. Cl. 318—636 **1 Claim**



1. A system for locating a device at a desired position by providing a signal indicative of the velocity of one member of the relatively moveable members of a transducer coupled to said device, comprising:

first means for generating a clock signal;

second means connected to receive said clock signal for generating both a first signal having a phase determined by the relative motion of said relatively moveable members and a phase reference signal;

third means connected to receive said clock signal and said phase reference signal for providing a plurality of signals each phase delayed relative to the other of said plurality of signals by one or more clock signal increments;

fourth means connected to receive said plurality of signals and control signals for outputting one of said plurality of signals, said one of said plurality of signals having a phase corresponding to said desired position;

fifth means connected to receive said clock signal and said one of said plurality of signals for providing a second plurality of signals each phase displaced relative to the other of said second plurality of signals;

phase detector means connected to receive said first signal and said second plurality of signals for providing a plurality of phase displaced position signals;

differentiator means adapted to receive some of said plurality of position signals for generating a plurality of signals indicative of the velocity of said member;

inverter means adapted to receive said velocity signals for producing amplitude inverted forms of said velocity signals; and

sampling means adapted to receive said velocity signals and said inverted velocity signals as inputs to be sampled and the undifferentiated position signals as sampling controls for sequentially sampling the amplitudes of said velocity signals to provide a composite output signal at all times directly proportional to the velocity of said member.

4,357,567

REVERSIBLE MOTOR

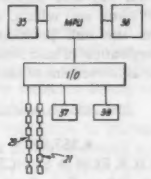
Brian Rock, Dukinfield, England, assignor to Barcrest Limited, Ashton-under-Lyne, England

Filed Oct. 15, 1980, Ser. No. 197,186

Claims priority, application United Kingdom, Oct. 19, 1979, 7936289

Int. Cl.³ G05B *11/00*

U.S. Cl. 318—687 **8 Claims**



1. A reversible linear motor comprising a coil arrangement and a conductive body which are mounted so as to be movable one relative to the other, wherein the coil arrangement has three separate coils disposed adjacent the conductive body: namely a pair of interconnected coils spaced from each other in the direction of said relative movement of the body and the coil arrangement, and a third coil between the pair of coils, the coils being arranged for connection to a single phase a.c. supply, and reversing means being provided for reversing the connection of the third coil, or the interconnected pair of coils, relative to the supply, and wherein the two outer coils are substantially identically would coils of opposite hand interconnected via a tuning capacitor to give a singly tuned pair, and the central coil is predominantly inductive, whereby the magnetic fluxes of the two outer coils are anti-phase to each other (180° apart) and the pase of the magnetic flux of the central coil lies between the outer coils (spaced by 90° from each coil).

4,357,568

VARIABLE SPEED AC DYNAMO ELECTRIC MACHINE

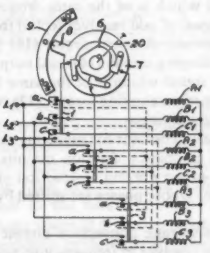
Donald L. Hore, 10 Charnhill Vale, Mangotsfield, Bristol BS17 3JT, England

Filed Sep. 2, 1975, Ser. No. 609,790

Claims priority, application United Kingdom, Sep. 5, 1974, 38859/74

Int. Cl.³ H02K *37/00*

U.S. Cl. 318—695 **8 Claims**



1. A single or multi-phase dynamo electric machine comprising:

a stator having at least one winding wound thereon, arranged to be energized from an alternating current source to provide changing magnetic flux;

a movable member movable with respect to said stator comprising at least one short circuited winding providing at each position of said movable member alternative paths of

low and high reluctance to the passage of the changing magnetic flux, to cause said movable member to adopt a position in which linkage of said at least one short circuited winding of said movable member with the energized stator winding is minimized;

means for sensing the relative position of said stator and said movable member; and,

switching means arranged to be actuated by said sensing means and which, with said sensing means at a null position, causes said movable member to lock in position relative to said stator and which, with said sensing means displaced from the null position, causes self-sustained successive energization of said stator windings and consequent continuous movement of said movable member past said stator.

4,357,569

CONTROL DEVICE FOR A SYNCHRONOUS MOTOR

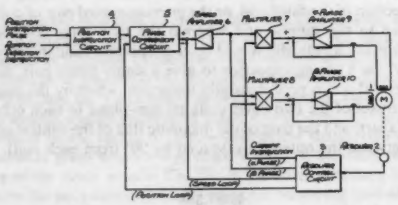
Takanobu Iwakane; Tohru Kai; Kenji Hirose, and Koichiro Nakagawa, all of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Tokyo, Japan

Division of Ser. No. 933,914, Aug. 15, 1978, Pat. No. 4,259,628. This application Jun. 27, 1980, Ser. No. 163,416

Claims priority, application Japan, Aug. 17, 1977, 52-98991; Aug. 17, 1977, 52-98992; Nov. 14, 1977, 52-153626; Nov. 17, 1977, 52-155998; Mar. 3, 1978, 53-24730

Int. Cl.³ G05B *1/01*

U.S. Cl. 318—721 **1 Claim**



1. A control device of a synchronous motor which carries out a vector control so that a torque equivalent to that of a shunt DC motor is generated by controlling the instantaneous value of a stator current in the synchronous motor, which comprises:

a resolver coupled to said synchronous motor;

a first frequency division circuit (15) for subjecting an output of a shaping circuit (13), said output being a rectangular wave signal which is of the same frequency as that of a detection signal of said resolver to 1/n frequency division;

a second frequency division circuit (16) for subjecting an output of a shaping circuit (14), said output being a rectangular wave signal which is of the same frequency as that of an output of an exciting circuit (12) of said resolver to 1/n frequency division;

a two-phase beat generator for receiving outputs of said first and second frequency division circuits (15 and 16), to output two-phase current instruction signals cos (θ_e/n) and sin (θ_e/n) whose phases are shifted by 90 degrees from each other;

a frequency-to-voltage conversion circuit for subjecting a signal of said resolver to frequency-to-voltage conversion, to provide a speed feedback signal;

a third frequency division circuit (23) for subjecting the signal of said resolver to frequency division, to provide a position signal;

a phase comparison circuit for comparing the phase of a position instruction signal with the phase of said position signal; and

first and second multipliers (7 and 8) in which said two two-phase current instruction signals are multiplied by a speed signal which is obtained by comparing an output of said phase comparison circuit with said speed feedback signal, respectively,

outputs of said first and second multipliers being used as instruction signals for the stator current in said synchronous motor.

4,357,570

VOLTAGE COMPENSATION FOR AN A-C NETWORK SUPPLYING A RAPIDLY-CHANGING LOAD

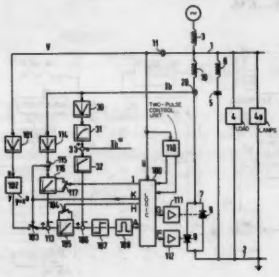
Eberhard Schmid, Dormitz, and Wolfgang Kaufhold, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,109

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939251; European Pat. Off., Jun. 19, 1980, 80103430.7

Int. Cl.³ G05F *1/70*

U.S. Cl. 323—210 **10 Claims**



1. A circuit for controlling a supply voltage between two conductors of an A-C network which supplies electrical power to a load having a rapidly changing impedance so as to maintain a half-wave mean supply voltage amplitude which corresponds to a predeterminable value, the circuit being of the type having at least a first controlled electric valve electrically disposed between the conductors, and a measuring device for producing a voltage signal responsive to the supply voltage on at least one conductor, the circuit being CHARACTERIZED IN THAT there is further provided:

valve control means for controlling the conduction state of the first controlled electric valve, said valve control means providing at least one firing pulse during a half-wave of the supply voltage which is of a first polarity so as to cause the first controlled electric valve to conduct, said firing pulse being responsive to a first signal corresponding to the difference between the amplitude of a first integration signal, corresponding to an integration of the voltage signal, and the predeterminable value; and

supplementary firing signal means for producing a supplementary firing signal for placing the first controlled electric valve in a conductive state if the first controlled electric valve has been in a non-conductive state for a period exceeding a predetermined maximum time period.

4,357,571

FET MODULE WITH REFERENCE SOURCE CHARGEABLE MEMORY GATE

Bernward Roessler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 20, 1979, Ser. No. 68,216

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842546

Int. Cl.³ G05F *1/56, 3/20*

U.S. Cl. 323—281 **6 Claims**

1. An integrated FET module comprising a reference source, a converter including said reference source and opera-

tive for converting from one of an analog signal and a digital signal, to the other,

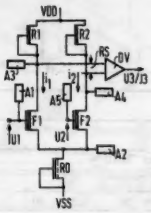
said converter including said reference source and other converter elements being located on the same FET module,

said reference source, after being manufactured, being subsequently selectively and precisely adjustable to supply an output reference voltage value as required by said converter,

said reference source having two separate stages for coupling with the same direct current supply voltage and each stage forming a series circuit comprising at least one IG-FET and at least one load resistor,

means providing a tap between the one IG-FET and the one load resistor in each stage,

said taps being free of a direct cross-connection to the control gate of said IG-FET of the other stage,



at least one IG-FET of at least one of said stages including a memory gate which is applied at least partially between the controllable control gate and the channel region thereof, and which is surrounded on all sides by an insulator, and thus is floating in the electrical sense,

said reference source, between said taps of said stages, providing a differential voltage of defined value, which is used as said output reference voltage value,

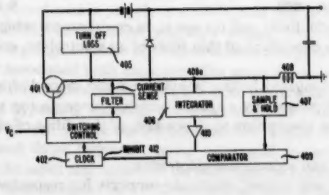
at least said memory gate being chargeable electrically, with step by step altered charge quantities, by way of trial, subsequently after manufacturing said module so as to receive a precisely determined charge such that said output reference voltage thus, which occurs during an application of said direct current supply voltage, is precisely that required by said converter, said memory gate during subsequent operation of said converter storing said precisely determined charge.

4,357,572

CURRENT FLARE OUT LIMIT CONTROL FOR PWM CONVERTER

Brad E. Andersen, Dover; Billy H. Hamilton, Summit, and Robert E. Schroeder, Flanders, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 26, 1981, Ser. No. 247,899
Int. Cl.³ G05F *1/46*
U.S. Cl. 323—286 **10 Claims**



1. A switching regulator comprising in combination a peak current control type voltage and current regulation control including a clock to periodically initiate conduction in a power switching device and means for terminating conduction in response to attaining a current threshold in the power switching device and a current flare out control circuit operative during current regulation modes of operation at low output voltages during overload conditions, the current flare out control including

a sensing connection to sense a voltage of an output filter inductor, an integrator coupled to the sensing connection and operative to continuously integrate the voltage of the filter inductor during nonconducting intervals of the power switching device, a peak detecting circuit coupled to the sensing connection and operative to acquire a peak voltage of the filter inductor during conducting intervals of the power switching device, and

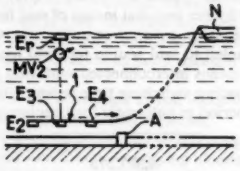
comparator means responsive to an equality of a voltage output of the peak detecting circuit and of the integrator, and inhibit circuitry to inhibit retriggering of the clock in response to the comparator means until equality is achieved in order to increase a periodic off time interval of the power switching device during overload conditions at low output voltages and reduce current flare out.

4,357,573

METHOD OF SURVEYING SUB-SEA PIPELINE

Bernard Heuze, Boulogne, France, assignor to Societe d'Etudes Contre la Corrosion (SECCO), Boulogne, France

Filed Jan. 30, 1980, Ser. No. 116,828
Claims priority, application France, Feb. 1, 1979, 79 02644
Int. Cl.³ G01R *31/02, 31/08;* G01V *3/15*
U.S. Cl. 324—54 **4 Claims**



1. A method for monitoring the condition of sheathings which electrically insulate a submarine pipeline in sea water, or for monitoring the operation of the anodes if said pipeline is under cathodic protection, said pipeline having an electrical potential differing from that of the sea water, said potential being proportional to the natural currents captured by the pipeline from the sea water at defective points in the insulating sheathing of the pipeline, or the natural currents emitted by the pipeline into the sea water by anodes, if said pipeline is under cathodic protection, said method comprises providing a set of three spaced apart substantially aligned electrodes, continuously displacing said set along said pipeline with said electrodes above and in generally aligned parallel relation to the pipeline, and continuously measuring the difference between the potential of the central one of said electrodes and the algebraic sum of the potentials of the other two of said electrodes to provide an indication of the natural currents captured or emitted by the pipeline.

4,357,574
LOADING APPARATUS FOR TESTING A POWER SUPPLY

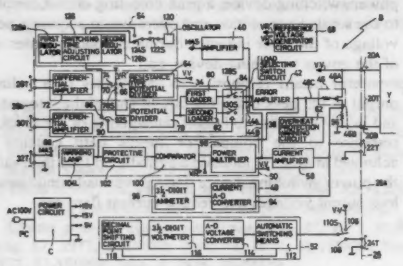
Kaihei Takamisawa, and Masatoshi Yui, both of Tokyo, Japan, assignors to Takamisawa Cybernetics Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1980, Ser. No. 143,706

Claims priority, application Japan, May 21, 1979, 54-66822[U]; May 21, 1979, 54-66824[U]; Sep. 11, 1979, 54-124710[U]

Int. Cl.³ G01R *15/12, 31/36*

U.S. Cl. 324—73 R **13 Claims**



1. A loading apparatus for testing a power supply under both dynamic and static conditions and wherein an artificially created dummy load simulates said power supply, comprising mode selection switching circuit means connected to select a constant resistance mode, a constant current mode and a slave mode; and load value selection switching circuit means interconnected with said mode selection switching circuit means; an error amplifier means connected to receive an input voltage signal in each said mode and a comparison voltage signal; a field effect transistor circuit means connected to receive the output of said error amplifier means as a gate control signal, said field effect transistor circuit means having a drain terminal means connected to receive the output from said power supply under test, said field effect transistor circuit means further having a source terminal means, means feeding the output of said source terminal means as said comparison voltage signal to said error amplifier means, a current display circuit means coupled to said source terminal means of said field effect transistor circuit means; an overpower protection warning circuit means also coupled to said source terminal means; a voltage display circuit means interconnected with said drain terminal means; and a loading switching time setting circuit means for setting a time period in automatic load exchange switching.

4,357,575
APPARATUS FOR USE IN TESTING PRINTED CIRCUIT PROCESS BOARDS HAVING MEANS FOR POSITIONING SUCH BOARDS IN PROPER JUXTAPOSITION WITH ELECTRICAL CONTACTING ASSEMBLIES

Delbert L. Uren, and Forrest L. Thompson, both of Kansas City, MO, assignors to DIT-MCO International Corporation, Kansas City, Mo.

Filed Jun. 17, 1980, Ser. No. 160,291

Int. Cl.³ G01R *31/02;* **H01R** *13/24*

U.S. Cl. 324—158 F **6 Claims**

1. In apparatus for use in effecting temporary electrical connections with multiple test point zones of each of a succession of printed circuit board devices:

a pair of relatively shiftable support means,

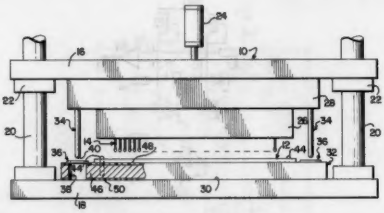
one of said support means being provided with a substantially flat surface;

means for relatively shifting said support means between a relatively more widely spaced relationship and a relatively more closely spaced relationship along a path of relative shifting that is substantially perpendicular to said surface as said closely spaced relationship is approached;

shiftable locator assembly means engaging and slidably supported by said surface for free movement in any direction across the latter when said support means are in said widely spaced relationship;

means adapted for mounting a printed circuit board device in a fixed position upon said locator assembly means with said test point zones of said device in facing relationship to a portion of the other of said support means when said support means are in said closely spaced relationship;

a plurality of contact means mounted on said portion of said other support means and positioned for respectively engaging corresponding test point zones of a printed circuit board device so mounted on said locator assembly means when the latter is in said predetermined operative position along said surface and said support means are in said closely spaced relationship; and



aligning means having a pair of cooperating assemblies respectively mounted on said other support means and on said locator assembly means, said cooperating assemblies being disengaged from each other when said support means are in said widely spaced relationship but being interengaged with each other as said support means are relatively shifted into said closely spaced relationship to shift and hold said locator assembly means in said predetermined operative position,

whereby proper alignment between said contact means and the test point zones of said printed circuit board device mounted on said locator assembly means is assured.

4,357,576
CONDUCTIVITY CELL

William M. Hickam, Churchill; Pang-Kai Lee, Murrysville, and William T. Lindsay, Jr., Hempfield Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 15, 1980, Ser. No. 197,317

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—450 **9 Claims**

1. A conductivity cell for use in an environment which may include the deposition of thin films of an electrolyte, comprising:

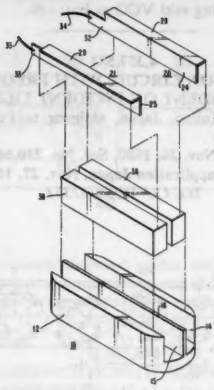
(A) an elongated holder having first and second elongated slots separated by a spacer member having a top surface portion susceptible to deposition of thin films of electrolyte;

(B) first and second foil electrodes;

(C) first and second electrode supports for respective support of said first and second electrodes;

(D) said first and second supports being positioned within respective ones of said first and second slots;

(E) said first and second electrodes being supported so as to extend beyond said top surface portion of said spacer



member thereby forming a channel therewith, for said electrolyte deposition therein.

4,357,577

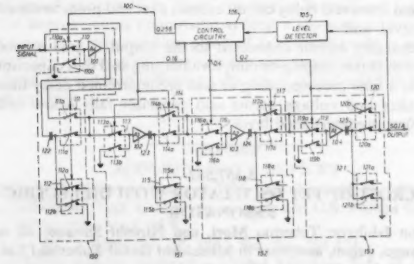
INSTANTANEOUS FLOATING POINT AMPLIFIER

Miles A. Smither, Houston, Tex., assignor to Geosource Inc., Houston, Tex.

Continuation of Ser. No. 46,827, Jun. 8, 1979, abandoned, which is a continuation of Ser. No. 921,599, Jul. 3, 1978, Pat. No. 4,158,819, which is a continuation of Ser. No. 749,218, Dec. 10, 1976, Pat. No. 4,104,596. This application Jun. 15, 1981, Ser. No. 273,952

Int. Cl.³ H03G *3/20*

U.S. Cl. 330—51 **1 Claim**



1. In an instantaneous floating point amplifier, having an input and an output, for amplifying each sample of a source signal to a level within preselected limits, said amplifier including a plurality of cascaded amplifier stages, each amplifier stage having a gain factor the improvement comprising:

circuitry associated with each amplifier stage for enabling the stage if it is required to amplify a sample of the source signal and for bypassing the stage if it is not required to amplify a sample of the source signal, all amplifier stages, those enabled and those bypassed, being connected in cascade between the input and output of the amplifier for the amplification of each sample, the resulting overall gain of the amplifier which is applied to a sample being the product of the gain factors of all enabled stages and being independent of the gain applied to another sample.

4,357,578

COMPLEMENTARY DIFFERENTIAL AMPLIFIER

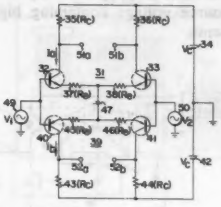
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 25, 1980, Ser. No. 190,610

Claims priority, application Japan, Oct. 5, 1979, 54-138097[U]; Oct. 30, 1979, 54-150438[U]

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—252 **7 Claims**



1. A complementary differential amplifier comprising: a first differential amplifier circuit including:

first and second amplifying elements of a first conductivity type, each of said first and second amplifying elements having a control electrode and first and second electrodes; and

first and second resistors connected in series between said second electrodes of said first and second amplifying elements, a common connecting point being defined between said first and second resistors;

a second differential amplifier circuit including:

third and fourth amplifying elements of a second conductivity type which is opposite to said first conductivity type, each of said third and fourth amplifying elements having a control electrode and first and second electrodes; and

third and fourth resistors connected in series between said second electrodes of said third and fourth amplifying elements, a common connecting point being defined between said third and fourth resistors;

said first, second, third and fourth resistors each having substantially the same resistance value;

a constant voltage circuit connected between said common connecting point between said first and second resistors and said common connecting point between said third and fourth resistors;

a first input terminal connected to said control electrodes of said first and third amplifying elements;

a second input terminal connected to said control electrodes of said second and fourth amplifying elements;

a first output terminal connected to at least one of said first electrodes of said first and second amplifying elements; and

a second output terminal connected to at least one of said first electrodes of said third and fourth amplifying elements.

4,357,579

POWER AMPLIFIER

Shuichi Kato; Hiromi Kusakabe; Hiroyasu Yamaguchi, and Yoshihiro Yoshida, all of Yokohamashi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 8, 1980, Ser. No. 195,131

Claims priority, application Japan, Dec. 20, 1979, 54-176638[U]

Int. Cl.³ H03F *3/26*

U.S. Cl. 330—297 **6 Claims**

1. A power amplifier comprising:

an input circuit for receiving an input signal;

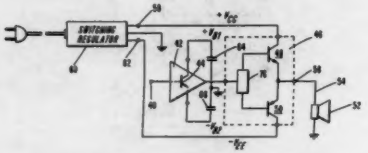
a driver circuit connected to said input circuit including a

driver transistor which amplifies the signal applied by said input circuit;

an output circuit;

a power amplifying circuit coupled between said driver circuit and said output circuit including a power transistor which power-amplifies the amplified signal from said driver circuit and provides a power-amplified output signal to said output circuit;

a first power supply means of the switching regulator type connected to said power amplifying circuit for supplying a first DC power source voltage to said power amplifying circuit, said source voltage containing high frequency ripple components;



a second power supply means connected to said driver circuit for supplying a second DC power source voltage to said driver circuit;

said second power supply means having a lower DC voltage than said first DC power source voltage so that the amplitude peaks of the signal amplified by the driver circuit and applied to the power amplifier circuit are limited by the maximum voltage of the second DC voltage which is below the voltage level of the high frequency ripple components; the combination of the power amplifier circuit and the amplified output of the driver circuit acting to prevent saturation of the power transistor so that the power-amplified output signal is kept below the voltage level of the high frequency ripple components of the first DC power source voltage.

4,357,580

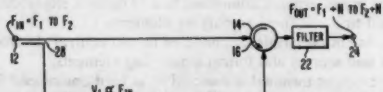
WIDEBAND MICROWAVE FREQUENCY DIVIDER

Daniel D. Mawhinney, Livingston, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 21, 1980, Ser. No. 180,390

Int. Cl.³ H03L *7/02, 7/06, 7/24*

U.S. Cl. 331—1 R **6 Claims**



1. A frequency divider circuit having an input terminal which is responsive to an input signal of frequency F_{IN} for producing an output signal at an output terminal of frequency $F_{IN} \div N$, where N is a nonunity positive integer, comprising in combination:

means responsive to said input signal for producing a voltage signal proportional to the frequency of said input signal;

a voltage controlled oscillator (VCO) operable over a range of frequencies about $F_{IN} \div N$, said VCO having a control terminal;

a correlation means coupled to said control terminal and responsive to said proportional signal for applying a voltage to said VCO to tune it to operate at substantially frequency $F_{IN} \div N$, wherein application of the signal F_{IN} to said VCO causes it to be tuned to produce a signal of frequency $F_{IN} \div N$, and

means for applying said input signal F_{IN} to said VCO for injection locking said VCO at $F_{IN} \div N$.

4,357,581

OSCILLATION CIRCUIT WITH FREQUENCY DEPENDENT ON INCIDENT LIGHT

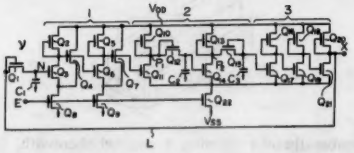
Mitsuo Higuchi, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 26, 1980, Ser. No. 210,662

Claims priority, application Japan, Nov. 27, 1979, 54-153109

Int. Cl.³ H03K *3/353*

U.S. Cl. 331—66 **11 Claims**



1. An oscillation circuit for providing an oscillation frequency which varies in response to the intensity of incident light rays, comprising

a first capacitor for storing charges, said charges being decreased in response to increase in the intensity of the light rays incident on said first capacitor,

a first waveform shaping circuit for converting the change of the voltage across said first capacitor to a rapidly changing waveform when said voltage across said capacitor crosses a first predetermined level,

delay circuit for delaying said rapidly changing waveform outputted from said first waveform shaping circuit by at least one predetermined delay time,

a second waveform shaping circuit for converting the change of the voltage outputted from said delay circuit to a rapidly changing waveform when said voltage outputted from said delay circuit crosses a second predetermined level, and

a charging circuit connected to the output of said second waveform shaping circuit, for charging said first capacitor at a time corresponding to said predetermined delay time after said voltage across said capacitor falls below said first predetermined level.

4,357,582

MICROSTRIP FET OSCILLATOR WITH DIELECTRIC RESONATOR

Osamu Ishihara; Tetsurou Mori, and Hiroshi Sawano, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1979, Ser. No. 105,483

Claims priority, application Japan, Dec. 29, 1978, 53-161618

Int. Cl.³ H03B *5/18*

U.S. Cl. 331—96 **10 Claims**

1. A microwave oscillator comprising:

a planar substrate;

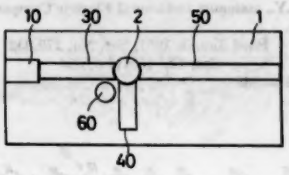
a field effect transistor having a gate electrode, a drain electrode and a source electrode disposed on the substrate;

an elongated gate transmission line connected to the gate electrode of the field effect transistor and disposed on the substrate;

a matching impedance for terminating said gate transmission line;

an elongated drain transmission line connected to the drain electrode of the field effect transistor disposed on the substrate at a predetermined angle to the gate transmission line;

an elongated source transmission line connected to the source electrode and disposed on the substrate and producing the oscillating output; and



a dielectric resonator disposed within said angle formed between the gate transmission line and the drain transmission line, said angle being substantially a right angle.

4,357,583

PASSIVE ELECTROMAGNETIC WAVE LIMITER AND DUPLEXER FORMED BY MEANS OF SUCH A LIMITER

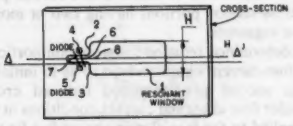
Jacques Martel, and Gilles Sillard, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 27, 1980, Ser. No. 153,781

Claims priority, application France, May 31, 1979, 79 13988

Int. Cl.³ H03G *11/02*

U.S. Cl. 333—17 L **19 Claims**



1. A passive semi-conductor electromagnetic wave limiter with low capacity and high cut-off frequency, comprising a wave guide and at least a pair of diodes of same polarity mounted oppositely in shunt connection in said wave guide, the improvements comprising at least a resonant window arranged in a cross-section plane of said wave guide in which said pair of diodes of same polarity and oppositely mounted in shunt, are connected between the edges of said window in the same plane.

4,357,584

ACOUSTIC WAVE DEVICES

Robert J. Murray, Burgess Hill, and Richard F. Mitchell, Merstham, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

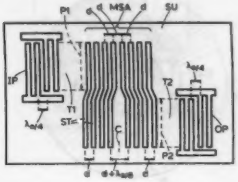
Filed Feb. 20, 1981, Ser. No. 236,424

Claims priority, application United Kingdom, Feb. 21, 1980, 8005926

Int. Cl.³ H03H *9/64, 9/25*

U.S. Cl. 333—195 **10 Claims**

1. An acoustic wave device comprising a substrate able to propagate acoustic waves at a surface thereof, input transducing means arranged to launch acoustic wave energy along a first propagation track at said surface, output transducing means arranged to receive acoustic wave energy from a second propagation track at said surface, and electrical coupling means arranged to receive acoustic wave energy from the input transducing means in the first track and to relaunch at least part of that energy as acoustic wave energy towards the output transducing means in the second track, the coupling means comprising an array of conducting strips across the first track and an array of conducting strips across the second track, the conducting strips of each array being discrete parallel strips electrically insulated from each other with strips of the two arrays being electrically connected in pairs with each pair comprising one strip from each array, the strips of the coupling means being arranged in at least one first group, the or each first group comprising two sub-groups and each sub-group including strips from both arrays, the spacing between the two sub-groups of a first group in the first track being different from the spacing between the two sub-groups of the first group in the second track, and wherein the composition of the two



sub-groups of the or each first group and their separation along the first and second tracks are selected such that any acoustic wave energy received from the input transducing means by the coupling means in the first track at a predetermined frequency is relaunched in the second track at that frequency with equal magnitude but in antiphase by the two sub-groups of the or each first group whereby acoustic wave energy at that frequency is suppressed at the output transducing means.

4,357,585

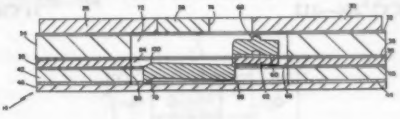
LAMINATED MAGNETIC SWITCH

Gary J. Wirth, Milwaukee, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Dec. 10, 1979, Ser. No. 101,834

Int. Cl.³ H01H *9/00*

U.S. Cl. 335—205 **12 Claims**



1. A switch which comprises a multiplicity of thin layers and a reed,

said reed being mounted for movement between a first position and a second position in an opening defined by certain of said thin layers,

said reed being formed of material responsive to magnetic forces,

said layers including also a first pole piece and a second pole piece,

said reed being in contact with both said pole pieces in one of said two positions.

4,357,586

COLOR TV DISPLAY SYSTEM

William H. Barkow, Pennsauken, and Josef Gross, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 14, 1980, Ser. No. 149,681

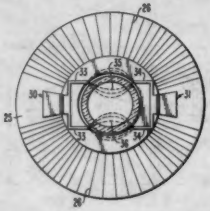
Int. Cl.³ H01F *3/00*

U.S. Cl. 335—211 **7 Claims**

1. In a television display system having a kinescope including a neck and an electron gun assembly therein for producing three electron beams, and a deflection yoke comprising a deflection coil toroidally wound about a magnetically permeable core encircling the paths of said beams departing said electron gun assembly, said coil producing a deflection field within the

region bounded by the interior of said core and an external field; a magnetic field influencing apparatus comprising:

first and second magnetically permeable members respectively disposed on opposite sides of said yoke, each of said members having a first end disposed within said external field and a second end disposed at the rear of the entrance end of said deflection yoke and adjacent the neck of said kinescope,



each of said members channeling a portion of said external field to its second end, each of said second ends being shaped in such manner as to form a pincushion-shaped field within said kinescope neck in the vicinity of said entrance end of said deflection yoke of such a magnitude and extent as to substantially correct coma errors otherwise introduced by said deflection field.

4,357,587

CORE LAMINATIONS, PARTICULARLY FOR TRANSFORMERS

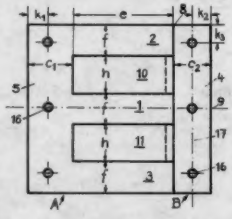
Karl Philberth, and Bernhard Philberth, both of Puchheim, Fed. Rep. of Germany, assignors to Wilfried Ernst Sawatzky, Victoria, Australia

Filed May 5, 1980, Ser. No. 146,590

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005567

Int. Cl.³ H01F *27/24*

U.S. Cl. 336—212 **11 Claims**



1. Core laminations for iron cores, particularly for transformers, comprising a plurality of stacked core laminations, said core laminations provided with legs having a maximum of three parallel spaced legs of equal length and of substantially equal width and two yokes connecting the ends of said legs, a joint being provided between one end of each leg and the adjacent yoke for interleaving in the winding, and the width of the jointlessly connecting yoke being greater than the parted yoke, wherein, the width (c_1) of the jointlessly connecting yoke (5) is at least 1.2 times, and at the most 1.7 times, the width (f) of each leg (1,2 or 3) and wherein the width (c_2) of the parted yoke (4) is at least 1.1 times, and at the most 1.3 times, the width (f) of each leg (1,2 or 3), such that the width (c_1) of the jointlessly connecting yoke (5) minus the width (c_2) of the parted yoke (4) is at least 0.1 times, and at the most 0.4 times, the width (f) of each leg (1,2 or 3) ($1.2f \leqq c_1 \leqq 1.7f$ and $1.1f \leqq c_2 \leqq 1.3f$ and $0.1f \leqq c_1 - c_2 \leqq 0.4f$).

4,357,588

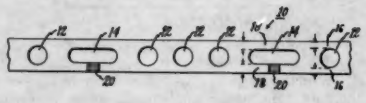
HIGH VOLTAGE FUSE FOR INTERRUPTING A WIDE RANGE OF CURRENTS AND ESPECIALLY SUITED FOR LOW CURRENT INTERRUPTION

John G. Leach, Hickory, N.C., and James J. Carroll, Clifton Park, N.Y., assignors to General Electric Company, Philadelphia, Pa.

Filed Jun. 3, 1981, Ser. No. 270,032

Int. Cl.³ H01H *85/04*

U.S. Cl. 337—160 **10 Claims**



1. A high voltage fuse for interrupting a wide range of currents and especially suited for low current interruption having a tubular insulating casing, and an inert granular material of high dielectric strength within said casing, said fuse further comprising:

one or more ribbon-type fuse elements, the elements being electrically connected in parallel when more than one is present;

said one or more fuse elements comprising at spaced locations along the length of an element a first and a second plurality of portions of first and second predetermined reduced transverse cross-sections, respectively, of the fuse element available for the conduction of current, said second plurality of reduced cross-section portions having two or more parallel conductive segments;

said first predetermined reduced cross-section portions having a fusible time-current characteristic so as to initiate melting before the second predetermined reduced cross-section portion under first abnormal current conditions in which the current applied to the fuse element exceeds a first predetermined current value for a first predetermined time duration;

said second predetermined reduced cross-section portions having a fusible time-current characteristic so as to initiate melting before the first predetermined reduced cross-section portions under second abnormal current conditions in which the current applied to the fusible element is less than the first predetermined current and has a time duration exceeding a second value which is greater than the first predetermined time duration;

said two or more conductive segments having fusible materials one of which has a higher melting temperature than the material of said remaining segment or segments so that said one conductive segment melts after the other segment or segments under said second abnormal current conditions;

said one segment of each of said second plurality of reduced cross-section portions having a sufficiently long melting time under said second abnormal current conditions to force all of said remaining segments of substantially all of the second plurality of reduced cross-section portions to melt before melting of said one segments.

4,357,589

TEMPERATURE RESPONSIVE ELECTRICAL SWITCH CONSTRUCTION, PARTS THEREFOR AND METHODS OF MAKING THE SAME

Frank Payne, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

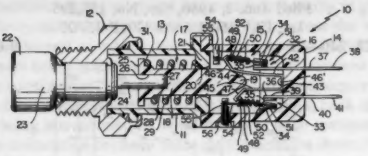
Filed Sep. 15, 1980, Ser. No. 187,498

Int. Cl.³ H01H *37/44*

U.S. Cl. 337—315 **56 Claims**

1. In a temperature responsive electrical switch construction having electrical contact means operated by a stem means of a piston and cylinder type thermal device carried by said construction, the improvement wherein said contact means com-

prises a plurality of pairs of cooperating contacts arranged to have each cooperating pair thereof operated serially by said stem means as said thermal device senses different predetermined temperatures, each said pair of cooperating contacts



comprising a fixed contact and a movable contact, said construction having a plurality of terminals projecting therefrom and being substantially parallel to each other and to said stem means, said fixed contacts being respectively carried by said terminals.

4,357,590

COMPOSITE THERMISTOR COMPONENT

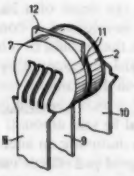
Charles J. G. Belhomme, Brussels, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 182,194

Claims priority, application Netherlands, Aug. 28, 1979, 7906442

Int. Cl.³ H01C *7/02*

U.S. Cl. 338—23 **7 Claims**



1. A thermistor component comprising

a first positive temperature coefficient of resistance thermistor,

a second positive temperature coefficient of resistance thermistor thermally in contact with said first thermistor, said second thermistor having a resistance substantially higher than the resistance of said first thermistor in the unoperated condition, and said second thermistor having a resistance lower than the resistance of the first thermistor at an operating temperature, wherein said second thermistor contributes to heating of said first thermistor during operation,

electrical connection to said first thermistor applied through metallic contact layers on said first thermistor, and

electrical connection to said second thermistor applied solely by mechanical contacts to a surface of said second thermistor, wherein said first thermistor has contact layers at opposite major faces, and said second thermistor has opposite major faces free of contact layers.

4,357,591

VARIABLE RESISTOR

Richard Gray, Tyne & Wear, England, assignor to Allen-Bradley Company, Milwaukee, Wis.

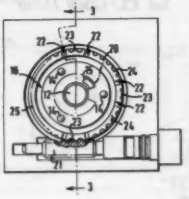
Filed May 21, 1981, Ser. No. 266,027

Claims priority, application United Kingdom, May 28, 1980, 8017413

Int. Cl.³ H01C *10/32*

U.S. Cl. 338—162 **5 Claims**

1. A variable resistor having an arcuate resistor element, a rotor having gear teeth and carrying a wiper contact which contacts the resistor element, and a rotatable worm meshing with the gear teeth of said rotor, having the rotor limited to less than 360° of rotation and having a "clutching" arrangement which allows slipping between the rotor gear teeth and the worm when the rotor reaches a limit of its rotation, wherein the wiper-carrying rotor is of an elastomeric material, has a radial web extending to the periphery of the rotor to



provide an unbroken thickness of the periphery, and has extending from the unbroken thickness an axially-directed divided skirt providing circumferentially-separated, axially-directd cantilever flanges bearing the gear teeth, there being such flanges having respectively a few gear teeth and several gear teeth.

4,357,592

VARIABLE RESISTOR AND SWITCH ASSEMBLY

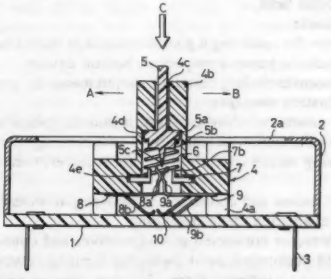
Tsutae Okuya, Miyagi, Japan, assignor to Alps Electric Company, Ltd., Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 270,006

Claims priority, application Japan, Jun. 6, 1980, 55-76091

Int. Cl.³ H01C *10/50*

U.S. Cl. 338—198 **4 Claims**



1. A variable resistor and switch assembly comprising:

an elongated housing, an insulating substrate secured to said housing, an elongated resistance element deposited in an elongated strip longitudinally along said substrate, a collector of conductive material deposited parallel to said resistance element, a pair of stationary contacts deposited parallel to said resistance element and said collector, a carrier of an electrically insulating material slidably movable within said housing and carrying a slider adapted to slidingly contact said resistance element and said collector, a pair of contactors made of resilient conductive material and slidingly contacting with said stationary contact, said contactors having portions adapted to engage one another, and an operation member made of an electrically insulating material and adapted to change the engagement between the pair of contactors.

4,357,593

GUIDANCE SYSTEM FOR INDIVIDUAL TRAFFIC

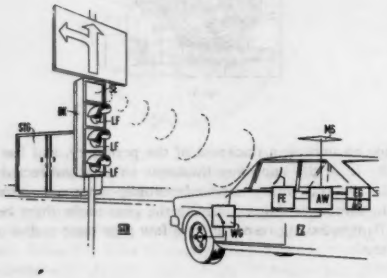
Romuald von Tomkewitsch, Ebenhausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,657

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936062

Int. Cl.³ G06F *15/50*

U.S. Cl. 340—23 12 Claims



1. A vehicle guidance system comprising:

a selection network of selection fields including a plurality of beacon devices each of which is located at the midpoint of a respective selection field for transmitting a guidance message including a location message identifying the location of the beacon and guidance information, the guidance information including specific information relating to each of the selection fields for travel to a respective selection field;

in a vehicle

a receiver for receiving a guidance message from a beacon as the vehicle passes a respective beacon device;

input means including destination input means for generating destination messages;

output means including indicator means for indicating guidance information in response to guidance signals; and

evaluating means connected to said receiver, connected to said

input means and connected to said output means,

said evaluation means including

a subtractor connected to said receiver and connected to said destination input means for forming relative destination coordinates from a location message and a destination message,

a selection field memory storing coordinates of the selection fields of the selection network,

a first comparator connected to said subtractor and connected to said selection field memory for producing an address of a specific selection field of a destination,

a guide information memory connected to said output means, and

a second comparator including a first input connected to said first comparator, a second input connected to said receiver and an output connected to said guide information memory, and responsive to said addresses of said specific selection field and the transmitted specific information relating to said specific selection field to store said specific information in said guide information memory.

4,357,594

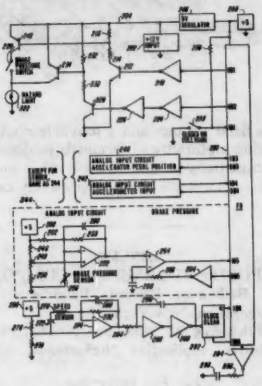
VEHICULAR HAZARD WARNING SYSTEM

Paul Ehrlich, Loveland, and Michael Wilson, Berthoud, both of Colo., assignors to Traffic Safety Devices Company, Loveland, Colo.

Filed Jun. 2, 1980, Ser. No. 155,295

Int. Cl.³ B60Q *1/26;* G01P *15/00*

U.S. Cl. 340—72 9 Claims



9. A vehicular hazard warning system comprising:

an indicator on the vehicle and energizable to yield a warning signal;

means for detecting the onset of a hazardous condition of said vehicle and developing a control signal having a variable parameter the amount of which is proportional to the degree of hazard represented by said condition;

means responsive to said parameter for energizing said indicator in a manner which quantitatively has a magnitude that is proportional to said amount;

said detecting means including an accelerometer that develops said control signal and effects variation of said parameter in proportion to the degree of deceleration of said vehicle;

an operator-controlled braking system for said vehicle, the degree of braking being proportional to a level of pressure applied, and pressure sensing means for developing a governing signal representing said level of said pressure;

and said detecting means also reacting to said governing signal for developing said control signal.

4,357,595

FLASHING LIGHT WARNING SYSTEM FOR VEHICLES

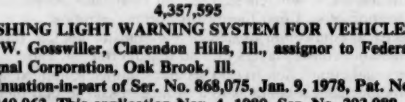
Earl W. Gosswiller, Clarendon Hills, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 868,075, Jan. 9, 1978, Pat. No. 4,240,062. This application Nov. 4, 1980, Ser. No. 203,989

The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.

Int. Cl.³ B60Q *1/46;* B61L *29/24;* G02B *5/12;* F21V *21/30*

U.S. Cl. 340—81 R 8 Claims



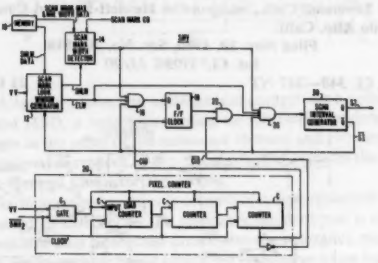
1. A flashing light warning system for mounting on the roof of a vehicle comprising, in combination, at least four individual

light assemblies each including a light source and a beam-shaping lens, said lens portion of each of said light assemblies being rotatable about a generally vertical axis for producing generally horizontal light flashes in different radial directions, said light assemblies being mounted in a common housing in generally side-by-side relation spaced transversely across the width of a vehicle roof on which said housing is mounted, certain of said lenses being oriented in different rotational positions with respect to other lenses to produce a predetermined sequence of flashes from different ones of said light assemblies, each of said lenses being interconnected with one another to maintain the relative orientation between them during rotation thereof, and motor drive means for conjointly rotating said lenses.

4,357,596
MULTI-LINE SCAN MARK VERIFICATION CIRCUIT

Michal M. Feilchenfeld, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 30, 1980, Ser. No. 154,742
Int. Cl.³ G06K *7/14*
U.S. Cl. 340—146.3 Z **3 Claims**



1. In an optical scanning system including a line scan camera for scanning a document on a line-by-line basis and developing both a video valid output signal indicative of valid video information being viewed by the camera and an electrical output signal indicative of the document information from each scan line, said document including areas for accommodating data information and one or more pre-printed scan marks for establishing the location of the document and alerting the system information processing circuitry to the fact that data information areas of the document are about to be scanned, said system including memory means for generating scan mark location information identifying the scan mark location for a predetermined document format, the improvement for verifying the presence of a scan mark via two or more scan lines, said improvement comprising:

first circuit means responsive to said scan mark location information from said memory means for acknowledging a first scan line identification of a scan mark and developing an output signal indicative thereof,

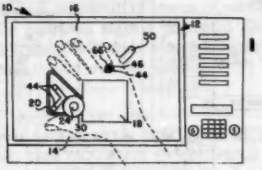
second circuit means responsive to said scan mark location information from said memory means for acknowledging a scan line identification of a scan mark and developing an output signal indicative thereof, and

third circuit means responsive to the output signal of said first circuit means for inhibiting the operation of said second circuit means for a predetermined time duration following identification of said first scan line of the scan mark, the output signal generated by said second means following said predetermined time duration being a system scan mark verification signal for alerting said system information processing circuitry to the fact that a valid scan mark has been detected.

4,357,597
PALM-POSITIONING AND SYSTEM-ACTUATING MECHANISM

Marlow D. Butler, Portland, Oreg., assignor to Palmguard, Inc., Beaverton, Oreg.

Filed Aug. 26, 1980, Ser. No. 181,479
Int. Cl.³ G06K *9/32*
U.S. Cl. 340—146.3 E **8 Claims**



1. A palm-positioning and system-actuating mechanism for properly positioning a person's palm and for actuating a system for coding the palm or comparing the coded palm for purposes of identification, said mechanism comprising:

a plate having a palm-positioning area, said plate having an opening and an arcuate slot adjacent said opening in said palm-positioning area;

a thumb and forefinger-engaging member, pivot means pivotally mounting said thumb and forefinger-engaging member onto said plate adjacent said opening; first switch-actuating means mounted onto said pivot means and having radiussed surface means thereon;

second switch-actuating means mounted onto said plate by pivot pin means and having a ring and little finger-engaging member thereon extending through said arcuate slot and radiussed surface means thereon;

switch means mounted on said plate means adjacent said radiussed surface means;

spring means mounted on said plate means between said switch means and said radiussed surface means;

said radiussed surface means engaging said spring means so that said spring means normally prevent said switch-actuating means from actuating said switch means, said pivot means and pivot pin means having play therein to enable said switch-actuating means to actuate said switch means via said radiussed surface means moving said spring means against said switch means when a person's thumb and forefinger engage said thumb and forefinger-engaging member and the ring and little finger engage said ring and little finger-engaging member and move said switch-actuating means thereby properly positioning the person's palm over said opening.

4,357,598
THREE-PHASE POWER DISTRIBUTION NETWORK COMMUNICATION SYSTEM

Waymon A. Melvin, Jr., St. Mathews Township, Wake County, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 9, 1981, Ser. No. 252,681
Int. Cl.³ H04B *3/56*
U.S. Cl. 340—310 A **12 Claims**

1. A communication system for a three-phase power distribution network, comprising:

a plurality of remote devices, certain of said remote devices being signal repeaters;

means for providing an outgoing communication signal intended for at least one of said remote devices;

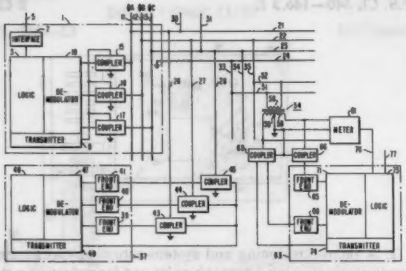
a plurality of interconnected three-phase power line conductors;

first means for independently coupling certain of said three-phase conductors to said means for providing said outgoing communication signal such that each phase conductor

carries an identical phase-related outgoing communication signal;

second means for independently coupling at least two of said three-phase conductors to each of said signal repeaters;

and wherein each of said signal repeaters includes means for



producing a composite signal in response to the coupled signals, and includes means responsive to said composite signal, and

third means for independently coupling at least one of said three-phase conductors to each of said other remote devices.

4,357,599

ANALOG-DIGITAL CONVERTER

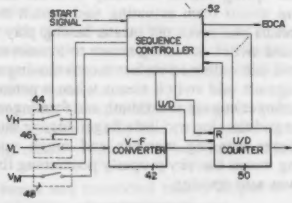
Yukiharu Takahashi, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 855,285, Mar. 10, 1978. This application Mar. 31, 1980, Ser. No. 135,662

Claims priority, application Japan, Mar. 12, 1977, 52-27470; Mar. 12, 1977, 52-27471

Int. Cl.³ H03K *13/20*

U.S. Cl. 340—347 AD **4 Claims**



1. An A-D conversion method using a V-F converter for converting an analog voltage signal into an output pulse signal having a frequency corresponding to the voltage level of the analog voltage signal, and a counter for counting the pulses of the output pulse signal from the V-F converter, said method comprising the steps of:

supplying a reference analog voltage signal of a reference voltage level V_R to the V-F converter for a first predetermined time period T_1 to generate a first output pulse signal having first output pulses of frequency F_R to be counted by the counter, the counter storing a value $N=F_R\times T_1$ at the end of said first predetermined time period;

resetting the counter;

supplying an analog voltage signal of an unknown voltage level V_U to the V-F converter for a second predetermined time period T_2 to generate a second output pulse signal having second output pulses of frequency F_U to be counted by the counter, the counter storing a value $M=F_U\times T_2$ at the end of said second predetermined time period;

wherein said second predetermined time period T_2 is so chosen as to satisfy the equation

$$T_2 = T_1 \times \frac{(2^n-1)}{N}$$

so that the contents M of the counter, after said analog voltage signal of unknown voltage level has been supplied to the V-F converter for said second predetermined time period T_2 denotes a digital representation of the unknown voltage level V_U of said analog voltage signal of an unknown voltage level:

$$T_2 = T_1 \times \frac{(2^n-1)}{N}$$

where "n" denotes the number of converted pulses.

4,357,600

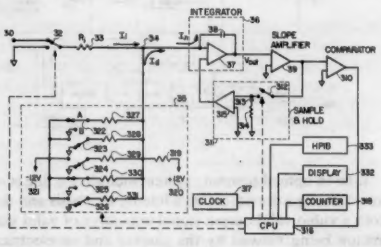
MULTISLOPE CONVERTER AND CONVERSION TECHNIQUE

James Ressmeyer; Joe E. Marriott, and Lawrence T. Jones, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 10, 1980, Ser. No. 205,818

Int. Cl.³ H03K *13/20*

U.S. Cl. 340—347 NT **21 Claims**



1. A multislope analog to digital converter for producing a digital indication of an input test signal, said converter comprising:

discharging means for supplying a discharging signal of magnitude and polarity controllably selected from the set of values $-(-B)^{n-1}I_1$ and $(-B)^kI_1$ for $k=0, \ldots, n-1$ for some constant I_1, for some integer base B and for some integer $n>2$;

an integrator responsive to the discharging signal and switchably responsive to the input test signal to produce an integrator output signal varying linearly in time with the time integral of the test signal and also varying linearly in time with the time integral of the discharging signal;

polarity means responsive to the integrator output signal for producing a polarity signal representing the polarity of the integrator output signal;

a clock to provide a clock signal;

a central processing unit coupled to the discharging means and responsive to the clock signal and to the polarity signal to periodically test the polarity signal and to regulate the magnitude and polarity of the discharging signal;

input switching means responsive to a signal from the central processing unit for applying the input test signal to the integrator for an interval of duration T;

calculating means coupled to the central processing unit for producing a digital value for the test signal from T and the magnitude and polarity of the discharging signal as a function of time; and

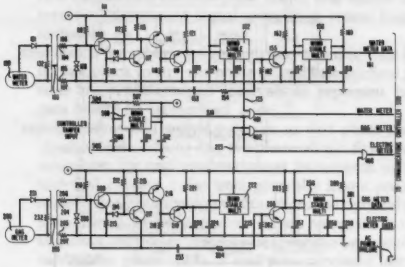
output means coupled to the calculating means for producing a digital output indication of the digital value for the test signal.

4,357,601

TAMPER PROTECTION FOR AN AUTOMATIC REMOTE METER READING UNIT

Stephen G. McWilliams, Greenwood, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 2, 1980, Ser. No. 183,362
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—506 8 Claims



1. A tamper protection arrangement comprising a resistance element (132), a resistance sensing circuit (101) for detecting changes in the value of the resistance element and providing an alarm signal in respect to the changes in the value of the resistance element characterized in that

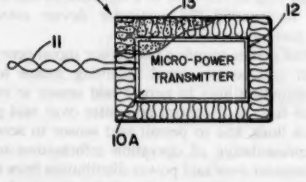
the resistance sensing circuit comprises a first transistor (109) connected directly to the resistance element and a second transistor also connected directly to the resistance element, the first transistor being turned on responsive to an increase in the value of the resistance element and the second transistor being turned on responsive to a decrease in the value of the resistance element.

4,357,602

FIRE DETECTION AND WARNING SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 63,721, Aug. 6, 1979, abandoned. This application Sep. 17, 1980, Ser. No. 188,050
Int. Cl.³ G08B *17/06*
U.S. Cl. 340—539 12 Claims



1. A fire detection system comprising in combination:

a monitor station including a short wave receiver for information defining the outbreak of fires and fire locations and means for indicating the presence of fires and their locations in an area under surveillance, said fire detection units each comprising:

(a) first means sensitive to the heat of a fire for generating electrical energy,

(b) second means for receiving said electrical energy generating code electrical signals,

(c) third means energized by said electrical energy for short wave transmitting said code signals,

said monitor station being operable to receive short wave code signals indicative of a fire when a fire detection unit becomes activated and means at said monitor station responsive to the received signals for indicating the existence and location of a fire, and

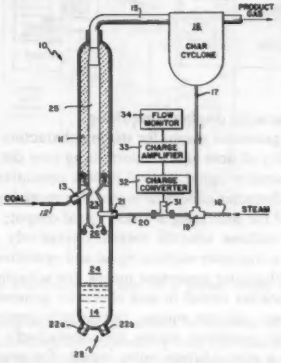
transponder means within receiving range of at least certain of said short wave transmitting means of said fire detection units for receiving signals generated thereby and operable for transmitting code signals indicative of fire and its location to said monitor station.

4,357,603

METHOD AND APPARATUS FOR ACOUSTICALLY MONITORING THE FLOW OF SUSPENDED SOLID PARTICULATE MATTER

Paul D. Roach, Darien, and Apostolos C. Raptis, Downers Grove, both of Ill., assignors to The United States of America as represented by the Depart of Energy, Washington, D.C.

Filed Nov. 24, 1980, Ser. No. 209,928
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—627 6 Claims



1. An acoustic apparatus for monitoring the flow of particulate matter in a flowable medium, the flowable medium being characterized in having an acoustic noise distribution over a broad frequency spectrum, comprising:

a transducer coupled to said flowable medium to sense sound waves therein and to generate an electrical signal representative of the flow of the particulate matter in said flowable medium;

a filter circuit, coupled to said transducer, and comprising a low frequency band pass filter to generate a first output signal, an intermediate frequency band pass filter to generate a second output signal, and a high frequency band pass filter to generate a third output signal;

a first ratio circuit coupled to said low frequency band pass filter and said intermediate frequency band pass filter to generate a first ratio signal, said first ratio signal being a function of said first output signal divided by said second output signal and being representative of the relative concentration of the particulate matter in the flowable medium; and

a second ratio circuit coupled to said low frequency band pass filter and said high frequency band pass filter to generate a second ratio signal, said second ratio signal being a function of said first output signal divided by said third output signal and being representative of the flow/-

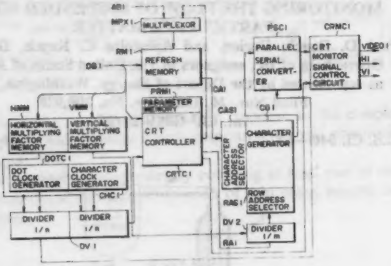
no-flow condition of the particulate matter in the flowable medium.

4,357,604

VARIABLE SIZE CHARACTER DISPLAY

Ryoji Imazeki; Seiichi Hattori, both of Hachioji, and Yutaka Mizuno, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Apr. 2, 1979, Ser. No. 26,247
Claims priority, application Japan, Apr. 14, 1978, 53-44035
Int. Cl.³ G09G 1/16
U.S. Cl. 340—731 **4 Claims**



1. A character display comprising:

character generator means for storing characters in the form of a plurality of dots and for outputting row dot data;

A CRT monitor signal control circuit, operatively connected to said character generator means, for receiving said row dot data and for providing a video signal output;

character address selector means, operatively connected to receive a character address signal and operatively connected to said character generator means, for selecting the address of a character stored in said character generator means;

row address selector means, operatively connected to said character generator means and operatively connected to receive a row address pulse signal, for providing a row address signal to said character generator means;

dot clock generator means, operatively connected to said CRT monitor signal control circuit, for providing dot clock pulses for synchronizing the read out of said video signal output;

character clock generator means, operatively connected to said character address selector means, for providing character clock pulses for synchronizing the receipt of said character address signal by said character address selector means;

first means, operatively connected between said dot clock generator means and said CRT monitor signal control circuit, for dividing the frequency of said dot clock pulses by an integer and for providing the frequency divided dot clock pulses to said CRT monitor signal control circuit;

second means, operatively connected between said character clock generator means and said character address selector means, for dividing the frequency of said character clock pulses by an integer and for providing the frequency divided character clock pulses to said character address selector means;

third means, operatively connected to said second means and said row address selector means, for dividing the frequency of said row address pulse signal by an integer and for providing the divided row address pulse signal to said row address selector means,

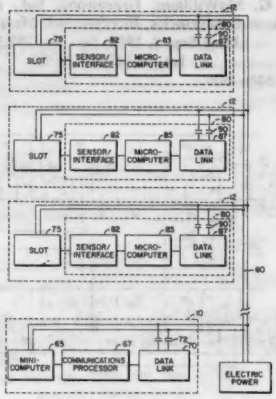
whereby the size of the characters generated by said character display is altered to obtain a desired size character.

4,357,605

CASH FLOW MONITORING SYSTEM

Kenneth P. Clements, Santa Cruz, Calif., assignor to Metallurgical Research, Inc., San Francisco, Calif.

Filed Apr. 8, 1980, Ser. No. 138,795
Int. Cl.³ H04M 11/04
U.S. Cl. 340—825.14 **14 Claims**



1. A system for monitoring the operation of a plurality of remote electrically operated devices, each of said devices receiving power from a common set of power distribution lines, comprising:

a central computer including signal generating means and signal receiving means;

central computer data link means coupling said central computer signal generating means and said central computer signal receiving means to said power distribution lines to permit said central computer to send signals over said power distribution lines and to receive signals over said power distribution lines;

said signals from said central computer having a time structure including a portion representative of a particular one of said remote devices with which communication is desired; and

a corresponding plurality of subassemblies associated with said remote devices, each of said subassemblies comprising:

a sensor having signal receiving means responsive to said signals from said central computer and having signal generating means for generating signals representative of desired operation information, said sensor having means for transmitting said signals representative of operation information only in response to a signal from said central computer designating the particular device associated with that particular sensor;

sensor data link means coupling said sensor signal generating means and said sensor signal receiving means to said power distribution lines to permit said sensor to receive said signals from said central computer over said power distribution lines, and to permit said sensor to send said signals representative of operation information to said central computer over said power distribution lines to said central computer, said sensor data link means including

a locally controlled clock for generating a first cyclical pulse train at a carrier frequency, said clock having a phase control input and means for stepping the phase of said first cyclical pulse train by predetermined increments in response to signals at said phase control input,

transmitting means responsive to said first cyclical pulse train for applying a first sinusoidal signal to said power distribution lines, said first sinusoidal signal having said

carrier frequency and being in a constant phase relationship with said first cyclical pulse train,

receiving means responsive to a second sinusoidal signal generally at said carrier frequency appearing on said power distribution lines, said receiving means having means for generating a second cyclical pulse train at the frequency of said second sinusoidal signal and in a predetermined phase relationship with respect to said second sinusoidal signal, and

phase comparison means responsive to said first cyclical pulse train from said clock and said second cyclical pulse train from said receiving means, said phase comparison means having means for producing a signal representative of the phase relationship between said first and second cyclical pulse trains; said sensor signal receiving means and signal generating means together including

first means for applying signals to said phase control input on said clock to step the phase of said first cyclical pulse train by predetermined intervals to represent binary data bits to be transmitted, and

second means for applying signals to said phase control input of said clock to step the phase of said first cyclical waveform by said predetermined increments to bring said first cyclical pulse train generally into a predetermined phase relationship with said second cyclical pulse train during an initial period of data reception in order to permit said phase comparison means to be sensitive to subsequent phase shifts of said predetermined intervals in said second sinusoidal signal, said second means for applying signals operating during data reception only until said first cyclical waveform has been brought into said predetermined phase relationship with said second cyclical waveform;

said sensor having means for transmitting said signals representative of operation information only in response to a signal from said central computer designating the particular device associated with that particular sensor.

4,357,606

MULTI-STATION TELEMETRY SYSTEM USING FIBRE OPTICS CABLES

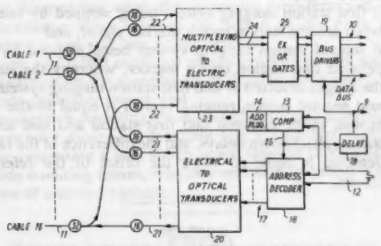
Michael Fortescue, Stanstead Mountfitchett, England, assignor to A. C. Cossor Limited, Harlow, England

Filed Aug. 11, 1980, Ser. No. 176,925

Claims priority, application United Kingdom, Aug. 16, 1979, 7928609

Int. Cl.³ G08C 19/00; H04Q 9/00

U.S. Cl. 340—870.01 **7 Claims**



1. A telemetry system comprising a plurality of transducer stations connected to a central station by respective fibre optics cables, each comprising at least one first fibre and a plurality of second fibres, each transducer station being selectively and separately activated by its respective fibre optics cable and including selective light transfer means responsive to the transduced quantity to cause light to pass from said at least one first fibre to a combination of the second fibres corresponding to the transduced quantity, the central station comprising launching means adapted to launch light pulses in said at least one first fibre of any one selected cable, and multiplexing means connected to the fibre optics cables of all of said transducer stations and responsive to light pulses returning along the second fibres thereof to multiplex data pertaining to the various transducer stations.

4,357,607

VIDEO EXTRACTOR

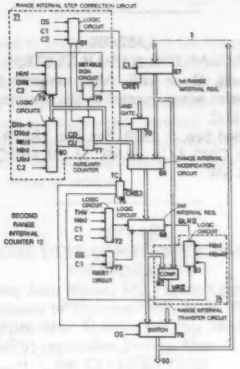
Wilhelmus F. Van der Heijden, Gouda, and Edward L. Intres, Moordrecht, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Feb. 1, 1980, Ser. No. 117,681

Claims priority, application Netherlands, Feb. 9, 1979, 7901028

Int. Cl.³ G01S 7/44

U.S. Cl. 343—5 VQ **29 Claims**



1. A video extractor for use in a pulse radar apparatus, comprising:

A. a shift-register memory, which is capable of storing a number of words corresponding with the number of range quants dividing the range interval to be covered by the pulse radar apparatus, said words containing information describing the number of hits received in a range quant, the number of misses established in a range quant, the initial and the final azimuth values of a target, the number of range quants in which the hits contributing to the buildup of a target have been recorded, the initial range of a target, and the status of various control bits for each range quant, said control bits including:

a. a recording bit (R bit), indicating that a new echo is applied to the video extractor in a certain range quant;

b. a detection bit (D bit), indicating that in a certain range quant a minimum number of hits have been recorded;

c. an identification bit (H bit), indicating the word in which the data to be determined is concentrated;

d. a miss bit (M bit), indicating that in a certain range quant no hits have been recorded; and

e. a readout bit (U bit), indicating that the word associated with a certain range quant can be read out;

B. a range counter whose counting rate is equal to the rate at which said words are shifted in the memory;

C. an arithmetic unit, comprising:

a. a hit counter for recording the number of hits received in a range quant;

b. a miss counter for recording the number of misses established in a range quant;

c. a circuit for determining the initial and the final azimuth values of a target;

d. a range interval counting unit for determining the number of range quants in which the hits contributing to the buildup of a target have been recorded;

e. a circuit for determining the initial range of a target;

f. control bit recording means for recording the status of the various control bits for each range quant;

said arithmetic unit receiving the words shifted out of memory and, in response to video and angular data received from the pulse radar apparatus and to range data provided by the range counter, updating information contained in said words during successive range sweeps and effecting concentration of information referring to each target in a single word by transferring the updated information to following or preceding words fetched from memory;

D. a central control unit generating control signals which together with the control bits controls the counters and circuits of the arithmetic unit; and

E. a readout circuit adapted to read out target position, size and range information from the words and to read out target range information from the range counter.

4,357,608

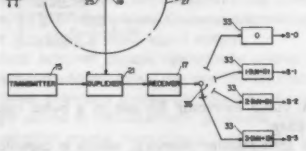
SCANNING RADAR SYSTEM

Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 3, 1980, Ser. No. 183,697

Int. Cl.³ G01S *3/58, 13/48, 13/70*; H01Q *3/04*

U.S. Cl. 343—5 SW **10 Claims**



1. A scanning radar system comprising:

a pulsed transmitter;

a receiver;

an array of energy beam radiators having individual beam paths with associated centerlines;

connection means for sequentially connecting a different one of the radiators to the pulsed transmitter at the beginning of each pulse repetition period and to the receiver during the subsequent interval between pulsed transmissions;

rotation means for rotating the beam path centerlines as a unit to scan a field of view; and

processing means connected to the output of the receiver for processing the pulses returned to each of the radiators from resolution cells in the field of view during the intervals of time between pulsed transmissions to cause the pulses returned to different radiators from the same resolution cell to be in time coincidence.

4,357,609

NONCOHERENT TWO WAY RANGING APPARATUS

Billie M. Spencer, Bountiful, Utah, assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,737

Int. Cl.³ G01S *13/08*

U.S. Cl. 343—12 R **10 Claims**

1. Apparatus for determining the range between a first station and a second station by measuring the time required for radio frequency signals to be transmitted between the stations, the combination comprising:

a first station pseudonoise generator **14** for generating a plurality of unique coded signals,

a first station reference clock **11** for driving said first station pseudonoise generator,

first station means for detecting **19** a predetermined one of said unique coded signals and for generating a first station epoch marker signal,

a first ranging system **21** started by said first station epoch marker signal,

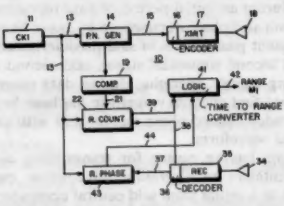
first station transmitter means **17, 18** coupled to said first station pseudonoise generator for transmitting the output of said first station pseudonoise generator to said second station,

second station receiver means **46, 47** for receiving said first station transmitted signals,

second station means for detecting **48** said unique coded signals transmitted from said first station and for generating a delayed first station epoch marker signal,

a second station pseudonoise generator **25** for generating the same plurality of unique coded signals as said first pseudonoise generator,

a second station reference clock **23** for driving said second station pseudonoise generator,



second station means for detecting **31** the predetermined one unique coded signal of said plurality of said unique coded signals and for generating a second station epoch marker signal, a second station ranging system **33** started by said second station epoch marker signal,

second station transmitter means **28, 29** coupled to said second station pseudonoise generator for transmitting said second station unique coded signals to said first station,

first station receiver means **34** for receiving said second station unique coded signals,

first station means for detecting **36** said predetermined one of said unique coded signals transmitted from said second station and for generating a delayed second station epoch marker signal,

said first station ranging system being stopped by said delayed second station epoch marker signal, and

said second station ranging system being stopped by said delayed first station epoch marker, whereby the sum of the ranges detected at said first station ranging system and said second station ranging system is equal to the turnaround range between said first station and said second station plus known delays, and the difference of the ranges detected is equal to twice the offset of the reference clocks.

4,357,610

WAVEFORM ENCODED ALTITUDE SENSOR

Samuel C. Kingston, and Virgil A. Ehresman, both of Salt Lake City, Utah, assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,872

Int. Cl.³ G01S *13/08*

U.S. Cl. 343—12 A **14 Claims**

1. A waveform encoded altitude sensing apparatus, comprising:

a radio frequency source,

a random code generator coupled to said radio frequency

source for producing a plurality of unique coded signals and unique radio frequency random code modulated signals,

first epoch detector means coupled to the output of said random code generator for detecting a unique epoch chip representative of one of said unique signals and for generating a start epoch signal,

altitude counting means started by said start epoch signal,

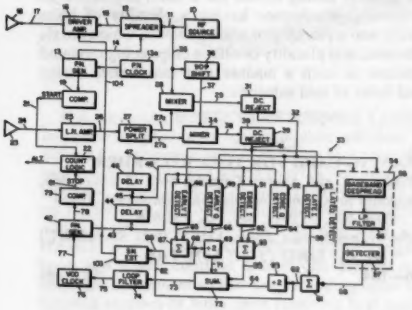
transmitting means for transmitting said unique modulated signals,

receiving means for receiving returned delayed and attenuated reflected signals,

mixer means coupled to said receiver means and said radio frequency source for producing baseband received signals and phase shifted baseband received signals,

power detector means comprising an early power detector and a late power detector, said early and said late power detectors being coupled to the baseband signals from said mixer means for recovering the baseband returned signals,

tracking code generator means adapted to track said returned baseband signals,



delayed means in the output of said tracking code generator for producing an output indicative of an early chip time and a late chip time,

said early and said late chip time outputs being coupled to said early and said late power detectors respectively for detecting the power outputs representative of early and late power correlation respectively,

summing circuit means coupled to said power detecting means for determining when the maximum predetermined power correlation exists between the output of said early power detector and said late power detector,

voltage controlled oscillator means coupled to said summing circuit means for speeding up or slowing down said tracking code generator means, and

second epoch detecting means coupled to said tracking code generator means for detecting said unique epoch chip and for generating a stop epoch signal adapted to stop said altitude counting means, whereby said altitude count is indicative of a sensed altitude.

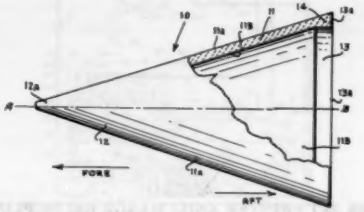
4,357,611

RADAR CROSS SECTION AUGMENTATION

Edward N. Skomal, Redlands, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 15, 1976, Ser. No. 676,442
Int. Cl.³ H01Q *15/18*
U.S. Cl. 343—18 C **3 Claims**

1. In a conical reentry vehicle having a geometric axis, a half cone angle, and a dielectric heatshield with an external surface, an internal surface, a forward portion with a nose, and a base portion with a surface, wherein the reentry vehicle has a radar cross section and the dielectric heatshield has a predetermined dielectric constant, the improvement comprising a reflecting step at the base portion of the heatshield, with the reflecting base step having a base step angle formed by, and at, the intersection of the internal surface of the heatshield and the surface of the base portion of the heatshield, and with the reflecting



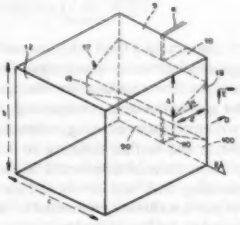
base step shaped to produce two total double reflections, internal of the heatshield, of any incident radar signal impinging in a nose-on attitude and direction upon the external surface of the heatshield and entering the heatshield, whereby the double reflected signal is re-directed outward from, and emerges outward of, the heatshield in the direction of the nose of the reentry vehicle, thereby increasing the nose-on radar cross section of the reentry vehicle.

4,357,612

MULTIMODE ULTRAHIGH-FREQUENCY SOURCE AND ANTENNA

Francois Salvat; Jean Bouko, and Claude Coquio, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 5, 1981, Ser. No. 240,899
Claims priority, application France, Mar. 7, 1980, 80 05199
Int. Cl.³ H01Q *13/02*
U.S. Cl. 343—786 **6 Claims**



1. A multimode ultrahigh-frequency source comprising:

a main waveguide forming a cavity of rectangular cross-section bisected by an E plane and an H plane intersecting in a longitudinal axis;

two pairs of supply guides of rectangular cross-section with broad faces parallel to said H plane symmetrically disposed about said H longitudinal axis, said pairs being separated from each other by a central longitudinal zone with boundaries parallel to said H plane, said supply guides opening into said cavity at an inlet thereof lying in a transverse discontinuity plane;

a horn adjoining an exit end of said cavity disposed in a transverse aperture plane, said horn diverging in said H plane from said aperture plane outward; and

an obstruction in the form of a block centered on said longitudinal axis, said block extending over a fraction of the

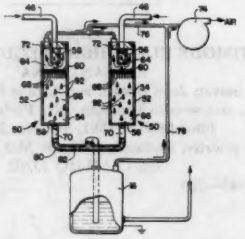
length of said cavity from said discontinuity plane toward said aperture plane with an E-plane cross-section symmetrically converging toward said H plane for substantially stabilizing a phase center of outgoing radiation at the intersection of said axis with said aperture plane over an extended frequency band, said phase center being a point of cophasal relationship between a fundamental mode of excitation of said supply guides and a hybrid mode generated at the junctions of said supply guides with said cavity.

4,357,613

INK JET PRINTER AND CHARGE DECOUPLING DEVICE THEREFOR

Robert A. Wiley, Richardson, Tex.; Theodore F. Williams, Union, Ohio, and James W. Davis, Richardson, Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed May 15, 1980, Ser. No. 150,130
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **18 Claims**



1. A device connecting a fluid inlet line and a fluid outlet line to permit flow of electrically conductive fluid therebetween, while presenting a low conductivity electrical path between said fluid inlet and outlet lines, comprising:

electrically nonconductive casing means defining an interior casing cavity and further defining an inlet opening in the upper portion thereof connected to said inlet line and communicating with said cavity and an outlet opening in the lower portion thereof connected to said outlet line and communicating with said cavity,

a perforated plate defining a plurality of perforations and mounted in said cavity, extending thereacross, to divide said cavity into an upper fluid receiving portion and a lower portion, and

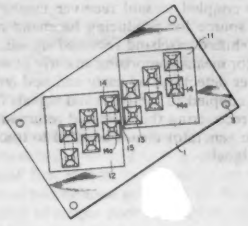
a plurality of drop stabilizer means, each of said stabilizer means mounted adjacent an associated one of said perforations and defining a downwardly extending capillary fluid path from said associated perforation into said lower portion of said cavity such that fluid supplied to said device through said fluid inlet line accumulates on said perforated plate in said upper portion and thereafter passes downward through said perforations along associated fluid paths to form a plurality of fluid drops which drip from said stabilizer means, thereby creating said low conductivity path between said inlet and said outlet lines, each of said drop stabilizer means defining a pair of downwardly extending fluid flow surfaces, said surfaces defining said capillary path therebetween.

4,357,614

INK PARTICLE JETTING DEVICE FOR MULTI-NOZZLE INK JET PRINTER

Masayoshi Tamai, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,315
Claims priority, application Japan, Oct. 7, 1980, 55-139407
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **7 Claims**



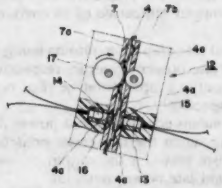
1. An ink particle jetting device for a multi-nozzle ink jet printer comprising: a substrate having a plurality of holes formed therein; and a plurality of silicon chips in which nozzle arrays are formed, said plurality of silicon chips being mounted on said substrate in such a manner that said nozzle arrays confront said holes of said substrate.

4,357,615

CLEANING CARD FOR TIME RECORDER

Kuwabara Yoshiharu, and Azuma Kazushi, both of Yokohama, Japan, assignors to Amano Corporation, Yokohama, Japan

Filed Feb. 9, 1981, Ser. No. 233,078
Claims priority, application Japan, Feb. 8, 1980, 55-14164[U]
Int. Cl.³ G01D *15/24*; A47L *1/00*
U.S. Cl. 346—134 **4 Claims**



1. A cleaning device for cleaning by sliding surface contact therewith opposing protective transparent covers in a time recorder by insertion in longitudinal direction into a card passage sized to receive time cards of given dimensions, said protective transparent covers covering card detecting and code reading photoelectric sending and receiving elements on opposing sides of said passage, said device comprising:

a cleaning card having front and rear surfaces and having dimensions approximately equal to said given dimensions;

said card having a series of resilient cleaning protrusions on both said front surface and said rear surface, said cleaning protrusions being equally spaced in rows and columns, said columns extending at an angle of inclination to said longitudinal direction, whereby said cleaning protrusions slidingly

contact and clean said covers on both of said opposing sides of said passage when said cleaning card is longitudinally inserted into said passage.

4,357,616

RECORDING MEDIUM

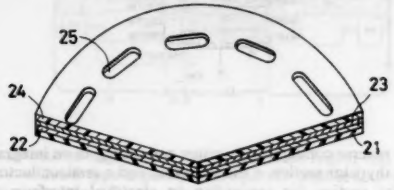
Motoyasu Terao, Tokyo; Yoshio Taniguchi, Hino; Shinkichi Horigome, Tachikawa; Kazuo Shigematsu, Kawasaki; Masahiro Ojima, Kokubunji; Yoshinori Miyamura, Tokyo, and Seiji Yonezawa, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,761

Claims priority, application Japan, Mar. 26, 1979, 54-34424; Sep. 5, 1979, 54-121818[U]; Jan. 11, 1980, 55-1218[U]

Int. Cl.³ G01D *15/34*

U.S. Cl. 346—135.1 **13 Claims**



1. A recording medium which comprises a substrate, a first inorganic material layer which exhibits sufficient light absorbitivity for projecting light to generate heat upon absorption of said projected light and which overlies said substrate, a second inorganic material which exhibits a read-out light transmissivity higher than that of said first inorganic material layer and which overlies said first inorganic material layer, and a recording layer which is disposed over said second inorganic material layer and which contains at least one organic material as a principal component so that said recording layer is capable of forming recesses or holes upon receiving heat generated from said first inorganic material layer; said first inorganic material layer containing at least 65 atomic% of at least one element selected from the group consisting of In, Bi, Te, Sb, Ge, Sn, Pb, Cr, Nb, Ni, Pd, Fe, Pt, Re, Ta, Th, Ti, Zr and Tl and up to 35 atomic% of at least one element selected from the group consisting of S, Se and O.

4,357,617

INK RECIRCULATING DEVICE OF INK JET PRINTER

Yoichi Shimazawa, and Toshiaki Kawamoto, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 26, 1979, Ser. No. 52,312

Claims priority, application Japan, Jun. 29, 1978, 53/79864

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **17 Claims**

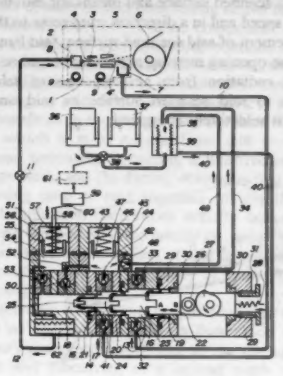
1. An ink jet system printer comprising:

a carriage means carrying a nozzle for discharging ink droplets toward a recording medium in response to an ink supply device, and deflection means for selectively deflecting the ink droplets for recording purposes;

a beam gutter means carried on the carriage means for collecting the ink droplets which are not contributive to the recording purposes;

a pump means including a piston mounted within a housing having a plurality of diaphragms disposed along the length thereof, said diaphragms being at least three in number and forming at least three pressure chambers therebetween for drawing in or forcing out ink; and

a first pressure chamber operatively connected to the beam gutter means to receive ink therefrom and selectively forces the collected ink back to an ink supply reservoir, the second and third pressure chambers being in communication with the ink supply reservoir for supplying ink to said nozzle at a constant flow rate, said at least three pressure chambers of said pump means being coaxial



cylindrical chambers and being operatively connected to a single drive member.

4,357,618

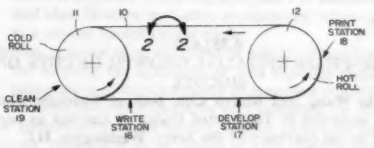
ELECTROSTATIC IMAGING APPARATUS

Evan L. Ragland, Atherton, Calif., assignor to Algographic Associates, Pleasanton, Calif.

Continuation-in-part of Ser. No. 951,400, Oct. 16, 1978. This application Dec. 12, 1979, Ser. No. 102,918

Int. Cl.³ G03G *15/08*

U.S. Cl. 346—159 **7 Claims**



1. Electrostatic imaging apparatus comprising: a member having a surface capable of holding an electrostatic image on its surface; means for applying a substantially uniformly distributed electrostatic charge on said surface; and writing means for creating said electrostatic image including means for providing a selective plurality of ionized gas-jets which discharge impinged upon portions of said uniformly distributed charge including a non-conductive plate having a plurality of perforations and in close proximity to said surface and electrical means individually connected to each perforation for gating said perforations open or closed for selecting which of the perforations will provide an ionized gas-jet.

4,357,619

HIGH-SPEED NON-IMPACT BAND PRINTER EMPLOYING AN ARRAY OF RADIATION SOURCES FOR PRINTING ON A MOVABLE SURFACE

Joseph M. Klockenbrink, 23 Van Wyck La., Lloyd Harbor, N.Y. 11743

Filed May 16, 1980, Ser. No. 150,318

Int. Cl.³ G06K *15/02*

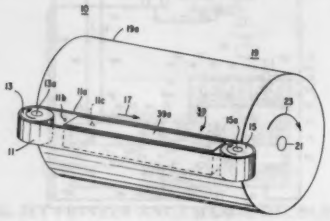
U.S. Cl. 346—160 **22 Claims**

1. A high speed non-impact printer comprising:

an array of independent radiation sources and switching means for selectively switching said radiation sources on and off at high speed, said radiation sources emitting radiation in a first direction;

a scanned surface movable at a high speed past said array;

a band interposed between said array of radiation sources and said scanned surface and means for moving said band at high speed and in a direction transverse to the direction of movement of said scanned surface, said band having at least one opening moving across said scanned surface for passing radiation from at least one of said radiation sources to said scanned surface as said one radiation source is selectively energized;



said band being positioned relative to said scanned surface to eliminate the need for focussing optics between said band and said scanned surface; and

radiation sensitive means on said scanned surface responsive to said radiation for use in creating an image, the cooperation between said radiation sources and said radiation sensitive means providing said non-impact capability.

4,357,620

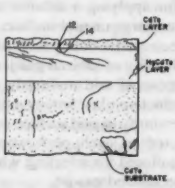
LIQUID-PHASE EPITAXIAL GROWTH OF CDTE ON HGCDTE

Cheng-Chi Wang, and Muren Chu, both of Thousand Oaks, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 18, 1980, Ser. No. 207,863

Int. Cl.³ H01L *29/161, 27/14*

U.S. Cl. 357—16 **2 Claims**



1. An infrared sensitive device which comprises a CdTe substrate that has been mechanically and chemically polished and has a (111)Cd oriented surface, an epitaxial layer of n-$Hg_{1-x}Cd_xTe$ grown on said substrate (111)Cd oriented surface by liquid-phase-epitaxial method, wherein x has a value from about 0.3 to about 0.5, and an epitaxial layer of p-CdTe grown on said epitaxial n-$Hg_{1-x}Cd_xTe$ layer surface by liquid-phase epitaxial method, said epitaxial layers forming a heterojunction wherein said n-$Hg_{1-x}Cd_xTe$ epitaxial layer serves as the infrared detector for said heterjunction which has the capability of being illuminated from the backside through said CdTe substrate which is transparent to infrared radiation and wherein said p-CdTe epitaxial layer serves as the signal processor for said heterojunction.

4,357,621

REVERSE CONDUCTING THYRISTOR WITH SPECIFIC RESISTOR STRUCTURES BETWEEN MAIN CATHODE AND AMPLIFYING, REVERSE CONDUCTING PORTIONS

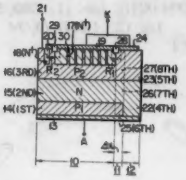
Minami Takeuchi, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 802,069, May 31, 1977, abandoned. This application Oct. 29, 1979, Ser. No. 89,102

Claims priority, application Japan, May 31, 1976, 51-63243

Int. Cl.³ H01L *29/747*

U.S. Cl. 357—39 **3 Claims**



1. A reverse conducting thyristor comprising in an integral form a thyristor section, a diode section and a semiconductor separator section for preventing an electrical interference between the thyristor section and the diode section, in which said thyristor section includes a first region of a first conductivity type formed on a first electrode; a second region of a second conductivity type formed on said first region; a third region of the first conductivity type formed on said second region; a main emitter region of the second conductivity type formed in said third region; a cathode electrode formed on said main emitter region; an auxiliary emitter region formed, with intervention of the exposure layer of said third region, facing at least a part of the periphery of said main emitter region which does not contact said separator section; an auxiliary gate electrode contacting said auxiliary emitter region and enclosing, with intervention of the exposure portion of said third region, at least a part of the periphery of said main emitter region which does not contact said separate section; and a main gate electrode formed on the exposure surface of said third region contacting the side wall of said auxiliary emitter region which does not face said main emitter region; said diode section includes a fourth region of the second conductivity type formed on said first electrode; a fifth region of the first conductivity type formed on said fourth region; and a second electrode formed on said fifth region and connected to said cathode electrode; and said separator section includes a sixth region formed on said first electrode and of the first conductivity type, a seventh region formed on said sixth region and of the second conductivity type and an eighth region formed on said seventh region and of the first conductivity type; resistor means including a groove between said cathode electrode and said second electrode in which the resistance values of the semiconductor layers between said cathode electrode and said second electrode and between said cathode electrode and said auxiliary gate electrode are each 2 to 18 Ohms.

4,357,622

COMPLEMENTARY TRANSISTOR STRUCTURE

Ingrid E. Magdo, Hopewell Junction, and Hans S. Rupprecht, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 18, 1980, Ser. No. 113,168

Int. Cl.³ H01L *27/02, 29/72*

U.S. Cl. 357—44 **5 Claims**

1. A transistor structure including at least one vertical bipolar PNP transistor comprising:

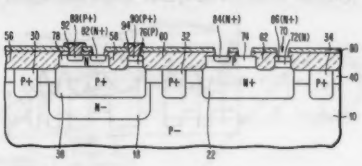
a substrate of P-type monocrystalline semiconductor material;

a N-type barrier region formed in the surface of said substrate;

a P-type collector region for said transistor formed within said barrier region, wherein the impurity concentration of said barrier region at the junction of said barrier region and said collector region is in the range from about 1×10^{16} to about 5×10^{17} atoms/cc and the peak impurity concentration of said collector is in the range from about 1×10^{18} to about 1×10^{20} atoms/cc;

an N-type epitaxial layer formed on the surface of said substrate over said collector and said barrier region;

a N-type base region for said transistor formed in the surface of said epitaxial layer;



an emitter region provided in said base region and doped with a P-type impurity from a polycrystalline source layer containing P-type dopants, the emitter region having a surface concentration of P-type doping ions of at least about 1×10^{19} atoms/cc extending to a depth of at least about 2000 Å from the surface and a concentration of less than about 1×10^{16} atoms/cc at a depth of 3500 Å;

a base contact region formed within said base region; and

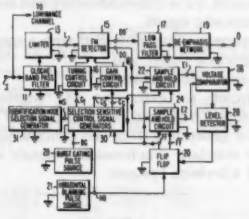
a collector contact region formed in the surface of said epitaxial layer which extends into contact with said collector region.

4,357,623

SECAM IDENTIFICATION SYSTEM

Werner Hinn, Zollikerberg, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,167
Int. Cl.³ H04N 9/47
U.S. Cl. 358—18 **12 Claims**



1. In a color television receiver subject to reception of composite color television signals having periodic vertical blanking intervals interposed between successive sequences of active line intervals, and inclusive of a chrominance component encoded in SECAM format; said SECAM-encoded chrominance component comprising, during image portions of alternate active line intervals, a first subcarrier having a first resting frequency and subject to frequency modulation over a given frequency deviation range in accordance with a first color-difference signal, and during image portions of the intervening active line intervals, a second subcarrier having a second resting frequency and subject to frequency modulation over said given frequency deviation range in accordance with a second color-difference signal, with a lead-in burst of oscillations at said first resting frequency preceding the image portion of each of said alternate active line intervals, and with a lead-in burst of oscillations at said second resting frequency preceding the image portion of each of said intervening active line intervals; said SECAM-encoded chrominance component additionally comprising: (a) during corresponding portions of alternate ones of a sequence of identification line intervals within each of said vertical blanking intervals, identification oscillations initially occurring at said first resting frequency, subsequently deviating therefrom in the direction of the limit of said deviation range which is most remote from said second resting frequency and terminally occurring at the frequency of said remote range limit; and (b) during corresponding portions of the intervening ones of said sequence of identification line intervals, identification oscillations initially occurring at the second resting frequency, subsequently deviating therefrom in the direction of the opposite limit of said deviation range, and terminally occurring at the frequency of said opposite range limit; apparatus comprising:

an FM detector, responsive to the received signals, and subject to operation in either a first mode with center frequency tuning corresponding to the resting frequency of said first subcarrier, or a second mode with center frequency tuning corresponding to the resting frequency of said second subcarrier;

a triggered flip-flop circuit for providing, when enabled, a half line rate wave output;

means, responsive to a half line rate wave output of said flip-flop circuit, for controlling the operating mode of said FM detector;

identification means for (a) effecting recognition of an occurrence of incorrect control of said detector operating mode in response to the output of said FM detector during said lead-in burst appearances, when operating in a first identification mode, and (b) effecting recognition of an occurrence of incorrect control of said detector operating mode in response to the output of said FM detector during said identification oscillation appearances, when operating in a second identification mode;

means, responsive to an output of said identification means, for altering the operation of said flip-flop circuit upon recognition of an occurrence of incorrect control of said detector operating mode by said identification means;

an identification mode selection signal generator; and

means, responsive to an output of said identification mode selection signal generator, for controlling the mode of operation of said identification means.

4,357,624

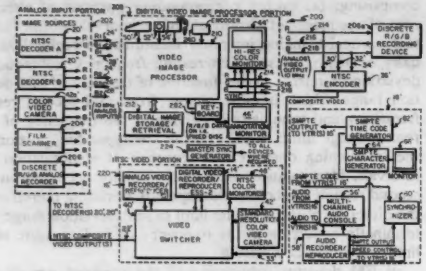
INTERACTIVE VIDEO PRODUCTION SYSTEM

George A. Greenberg, Los Angeles, Calif., assignor to Combined Logic Company, Beverly Hills, Calif.

Continuation-in-part of Ser. No. 39,184, May 15, 1979, Pat. No. 4,258,385. This application Mar. 20, 1981, Ser. No. 246,014
Int. Cl.³ H04N 9/535
U.S. Cl. 358—22 **37 Claims**

1. An interactive image processing system capable of simultaneously processing a plurality of digitized composite color images to provide a displayable resultant composite color image therefrom, each of said digitized composite color images having separate digitized red, blue and green image components and having an associated image information content, said system comprising retrievable storage means for retrievably storing each of said digitized red, blue and green image components in separate image storage planes for at least two different composite color images; digital image processing means operatively connected to each of said image storage planes for enabling separate simultaneous interactive processing between each of said stored red, blue and green image components of said two different composite color images on a pixel-by-pixel basis in accordance with a defined aspect ratio for said resultant composite color image; interactive means operatively connected to said digital image processing means for enabling said simultaneous interactive controllable digital processing of

the associated image information content of said two different digitized composite color images on said pixel-by-pixel basis;



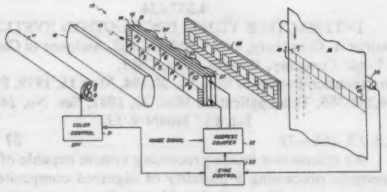
and means operatively connected to said image processing means for providing an output signal corresponding to said resultant color image.

4,357,625

LIGHT VALVE IMAGING APPARATUS HAVING ENLARGED PIXEL EXPOSING REGIONS

Robert L. Lamberts, Penfield, and Jerry R. Varner, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1981, Ser. No. 230,091
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **14 Claims**



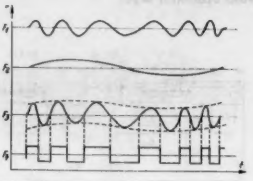
1. In electronic imaging apparatus having an imaging zone and including: (1) a light valve array having a plurality of pixel exposing regions each discretely activatable between a light transmitting and light blocking condition in response to an addressing electric field, (2) means for directing uniform illumination toward said imaging zone via said light valve array, and (3) addressing means for selectively activating the pixel exposing regions of said light valve array in accordance with the content of an image to be reproduced, the improvement wherein the pixel exposing regions of said light valve array are each larger in area than the pixels to be imaged at said imaging zone and wherein said apparatus includes means for directing light from respective pixel exposing regions of said array to respective reduced-sized pixel areas in said imaging zone.

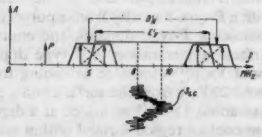
4,357,626

SYSTEM FOR BROADCASTING AUDIO-VISUAL TELEVISION SIGNALS SYNCHRONIZED BY A PILOT FREQUENCY AND METHOD FOR THE APPLICATION OF SAID SYSTEM

René Romeas, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Oct. 26, 1979, Ser. No. 88,354
Claims priority, application France, Oct. 31, 1978, 78 30851
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—335 **9 Claims**





1. A system for broadcasting audio-visual signals representing television pictures defined by fields, each field divided into scanning lines, said audio-visual signals including a video signal component, comprising:

a recording section including a first frequency-modulation circuit for producing a carrier wave modulated by said video signal,

a second circuit for producing a continuous sine wave pilot signal having a frequency that is a multiple of the line scanning half frequency of the pictures,

a third circuit for combining said carrier wave, as modulated by said video signal with said continuous sine wave pilot signal for producing a composite signal,

a fourth circuit for width-modulating and amplitude-limiting said composite signal,

an information medium provided with a track for recording said composite signal, and

a reading section comprising:

filter circuits for extracting said continuous sine-wave pilot signal from said composite signal and

means for generating from said continuous sine wave pilot signal standard synchronizing signals used in conventional television systems.

4,357,627

METHOD AND APPARATUS FOR IMPROVING RESOLUTION OF SCOPHONY SCANNING SYSTEM UTILIZING CARRIER PHASE REVERSAL

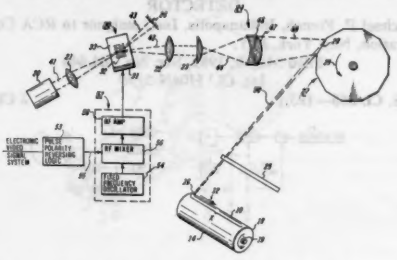
Richard V. Johnson, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1980, Ser. No. 144,759
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—348 **11 Claims**

1. An optical data recording system for high optical resolution information recording on a light sensitive member comprising:

means for providing a beam of radiant energy; a Bragg diffraction light-sound interaction medium including a transducer coupled to an acoustic wave transmitting medium characterized by a predetermined acoustic wave

propagation velocity; scanning means having at least one reflective surface positioned in the optical path of said beam for scanning said beam across said member by rotating said reflective surface a desired angle to impart the information content of said beam to said member; control circuit means for receiving a video bit stream, said video bit stream representing information to be recorded on said light sensitive member, the output of said control circuit being coupled to said transducer for propagating intensity-modulated acoustic waves in said medium at a predetermined velocity; means for projecting through said medium in a direction transverse to said acoustic waves said light beam to produce in said medium a moving image of information corresponding to said modulating signal, said image moving at said predetermined velocity; and



optical means interposed in the path of said intensity modulated beam and having magnification M associated therewith, said moving image being projected onto said scanned member within the envelope of said beam in a manner such that the velocity of said moving image is substantially equal to and in an opposite direction as the velocity of said scanning beam, the direction of movement of said beam and said image being substantially orthogonal to the direction of rotation of said medium, wherein the improvement is characterized by:

said control circuit means comprising pulse polarity reverse logic circuit means for reversing the voltage polarity of alternate bits in the received video bit stream to thereby increase the resolution of the intensity-modulated beam as recorded on said light sensitive member.

4,357,628

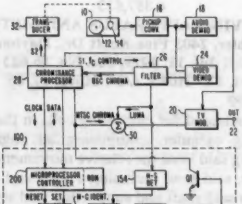
VIDEO DISC PLAYER WITH BURST REMOVER

James H. Wharton, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 23, 1980, Ser. No. 190,080

Int. Cl.³ H04N *5/76, 9/49, 5/79*

U.S. Cl. 358—317 **10 Claims**



9. A video disc player, comprising:

turntable means for rotating a video disc record;

signal recovery means for recovering a video signal from said record, said video signal including a color burst component for both monochrome and color program information recorded on said disc record;

video processor means responsive to said color burst component for producing a correction signal for effecting time base correction of said video signal;

modulator means responsive to the time base corrected video signal for producing a modulated picture carrier wave output signal for application to a television receiver;

circuit means responsive to an activating signal supplied thereto for effectively removing the color burst component of said recovered video signal from said modulated picture carrier wave output signal;

microprocessor controller means responsive to said recovered video signal for providing a monochrome-color identification signal; and

timing means responsive to a horizontal synchronizing component of said recovered video signal and to said monochrome-color identification signal for supplying said activating signal to said circuit means.

4,357,629

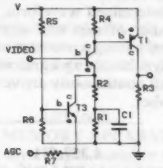
SYNC SEPARATOR WITH VARIABLE BIAS CONTROL

Michael McGinn, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1980, Ser. No. 220,611

Int. Cl.³ H04N *5/08*

U.S. Cl. 358—153 **10 Claims**



1. A sync signal separator comprising:

separator means adapted to receive a signal containing synchronizing and other information;

said synchronizing information having a maximum value that is different than the maximum value of said other information;

said separator means adapted to separate said synchronizing information from said other information by using a bias level having a value related to the difference in said maximum values of said synchronous and said other information,

control means adapted to receive said signal for providing a control signal having a value related to the magnitude of said signal containing synchronizing and other information;

bias control means including at least one semiconductor device having one electrode adapted to receive said control signal, one electrode coupled to a reference potential and another electrode coupled to said separator means for altering the value of said bias level in response to said control signal controlling the magnitude of current flow in said semiconductor device, and

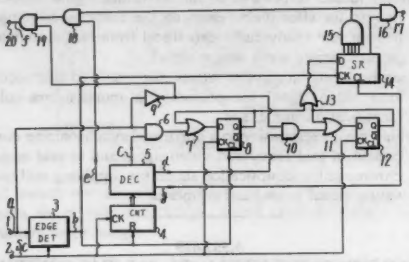
current flow through said semiconductor device varying the bias level in said separator means between said maximum amplitudes with current flow through said semiconductor device being determined, at least in part, by said control signal,

said semiconductor device conducting current only when the magnitude of said control signal differs from the magnitude of said reference potential by a predetermined polarity.

4,357,630
METHOD FOR DETECTING VERTICAL SYNCHRONIZING SIGNAL

Kentaro Odaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,532
Claims priority, application Japan, May 23, 1980, 55-68529
Int. Cl.³ H04N *5/10*
U.S. Cl. 358—154 **3 Claims**



1. A vertical synchronizing signal detecting method comprising the steps of:

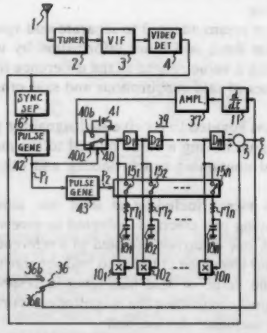
detecting a unit signal from a complex synchronizing signal including a vertical synchronizing signal formed of a predetermined number of continuous unit signals each having a predetermined waveform;

counting a number of said unit signals; and producing a detecting signal having a predetermined timing relation to said vertical synchronizing signal when it is detected that said unit signals continuously arrive with the above predetermined number.

4,357,631
GHOST CANCELLING SYSTEM

Kimitake Utsunomiya, Sagamihara; Hisafumi Yamada, Tohshin, and Choei Kuriki, Urawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,199
Claims priority, application Japan, Mar. 31, 1980, 55-41329
Int. Cl.³ H04N *5/21*
U.S. Cl. 358—167 **6 Claims**



1. A ghost cancelling system comprising:

an input terminal applied with a video signal including a ghost signal component;

a ghost cancelling circuit connected to said input terminal, said ghost cancelling circuit including a transversal filter; and

an output terminal connected to said ghost cancelling circuit for deriving an output video signal in which said ghost signal component is substantially suppressed, characterized in that said transversal filter comprises a combination of

(1) a common delay circuit used for a signal delay circuit and for a demultiplexer circuit in time divisional manner,

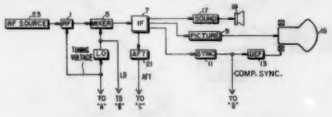
(2) a memory circuit connected to said common delay circuit and activated when said common delay circuit is used for said demultiplexer circuit, and

(3) a weighting circuit connected between said memory circuit and said common delay circuit.

4,357,632
SEARCH TYPE TUNING SYSTEM WITH SYNCHRONIZATION SIGNAL PRESENCE TRANSITION DETECTOR

Michael P. French, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 8, 1981, Ser. No. 261,448
Int. Cl.³ H04N *5/50*
U.S. Cl. 358—193.1 **2 Claims**



1. In a television receiver including RF means for selecting an RF signal from amoung a plurality of received RF signals, local oscillator means for generating a local oscillator signal, mixer means for generating an IF signal by heterodyning said selected RF signal and said local oscillator signal, and synchronization processing means for generating a picture synchronization signal, tuning control apparatus changing the frequency of said local oscillator in a given direction to locate an IF picture carrier, comprising:

synchronization presence detector means for generating a first level when said synchronization component is correct and for generating a second level when said synchronization component is incorrect;

synchronization presence transition detector means for determining the sequence in which said first and second levels are generated as the frequency of said local oscillator is changed in said given direction;

stop means coupled to said tuning control apparatus for inhibiting the frequency of said local oscillator from changing after said synchronization presence transition detector has determined that the first and second levels have been generated in a predetermined sequence depending on said given direction.

4,357,633
ENGRAVING APPARATUS AND METHOD

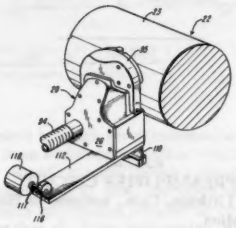
Lester W. Buechler, 2403 Pine Knott Dr., Dayton, Ohio 45431

Filed Jul. 11, 1979, Ser. No. 56,623
Int. Cl.³ H04N *1/24*; H04R *11/08*
U.S. Cl. 358—299 **9 Claims**

1. Apparatus adapted for engraving cells in the surface of a gravure printing cylinder, comprising an engraving head, means supporting said head for relative movement adjacent the cylinder surface, said head including a shaft and en engraving stylus, means on said shaft and supporting said stylus eccentrically of the axis of said shaft, flexible spring means supporting said shaft and said stylus for oscillation, a scraping shoe having a scraper edge, means supporting said shoe to position said edge for engaging the surface immediately after being engraved, means for adjusting the position of said shoe in two different angles relative to the surface for aligning said shoe precisely relative to the surface of the cylinder, and power operated drive means for oscillating said shaft and said stylus.

3. Apparatus adapted for engraving cells in the surface of a gravure printing cylinder, comprising an engraving head, means supporting said head for relative movement adjacent the surface, said head including a shaft and an engraving stylus, means on said shaft and supporting said stylus eccentrically of the axis of said shaft, means supporting said shaft and said stylus for oscillation, power operated drive means for oscillating said shaft and said stylus, a guide shoe disposed adjacent said stylus and having a face positioned to engage the cylinder surface to be engraved, and means for precisely adjusting said guide shoe and face in two different angles relative to the cylinder surface for precisely adjusting said guide shoe relative to the axis and the surface of the cylinder.

5. Apparatus for engraving cells in the surface of a gravure



printing cylinder, comprising an engraving head, means supporting said head for relative movement adjacent the surface, said head including a shaft and an engraving stylus having a pointed tip, means on said shaft and supporting said stylus eccentrically of the axis of said shaft with said tip projecting in a tangential direction, means rigidly secured to said head and supporting said shaft for oscillation on its axis to effect angular movement of said stylus tip in a radial plane for producing cells within the surface, said shaft supporting means including at least one elongated spring element rigidly connected to said shaft and projecting laterally from said shaft, said spring element being positioned to prevent lateral movement of said shaft in a direction generally parallel to the movement of said stylus tip, and power operated drive means for oscillating said shaft and said stylus.

4,357,634

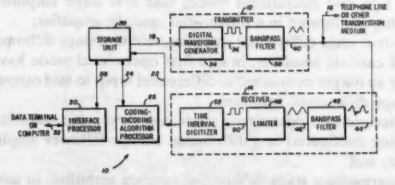
ENCODING AND DECODING DIGITAL INFORMATION UTILIZING TIME INTERVALS BETWEEN PULSES

David H. Chung, 4046 Ben Lomond Dr., Palo Alto, Calif. 94306

Continuation-in-part of Ser. No. 80,415, Oct. 1, 1979. This application Dec. 26, 1979, Ser. No. 107,048

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—40 **31 Claims**



1. A method for decoding digital information encoded into a first plurality of time intervals respectively between a plurality of successive pairs of digital pulses into a plurality of successive symbols equal in number to said first plurality of time intervals, said encoded data stream having a total time interval equal to the sum of said first plurality of time intervals plus said duration of all of said digital pulses, said plurality of symbols upon decoding making up a data stream, all of said symbols in said data stream being members of a non-empty set of "n" symbols, said second plurality of successive pairs of digital pulses being received by transmission, the method for decoding said encoded digital information comprising the steps of:

(a) providing a coding table coupled to said encoded data stream, said coding table storing a range of time intervals, each respective range of time intervals being related to a symbol in said set of "n" symbols, each range of time intervals further having adaptive assignment with said symbol occurring most frequently in said data stream assigned a range of time intervals in said coding table shorter than said range of time intervals assigned to said symbols occurring less frequently in said data stream, and with successively longer ranges of time intervals assigned to said symbol in said data stream having the next lower frequency of occurrence whereby said correspondence between each range of time intervals stored in said coding table to symbols in said set of "n" symbols minimizes the total time interval of said encoded data stream;

(b) receiving a first digital pulse for indicating the beginning of an encoded data stream;

(c) receiving a digital pulse successive to said preceeding digital pulse;

(d) measuring the time interval between said successive digital pulse and the digital pulse immediately preceeding said successive digital pulse;

(e) comparing said measured time interval with said range of time intervals stored in the coding table whereby each successive symbol is decoded from each successive time interval; and

(f) successively repeating steps (c), (d) and (e) for all the remaining time intervals in said encoded data stream whereby said encoded data stream is decoded.

4,357,635

DISC MEMORY APPARATUS

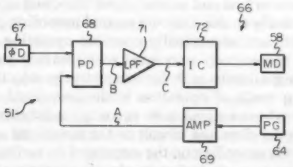
Takashi Hasegawa, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 17, 1980, Ser. No. 130,899

Claims priority, application Japan, Mar. 20, 1979, 54-33504; Mar. 20, 1979, 54-33505; Mar. 20, 1979, 54-33506; Mar. 20, 1979, 54-33507

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—51 **22 Claims**



1. A disc memory apparatus including a circular memory disc, drive means for rotating the disc and write means for selectively writing data on first and second circumferential tracks on the disc, the second track being spaced radially inwardly from the first track, characterized by comprising:

control means for controlling the write means to write data on the second track with a data density D2 and to write data on the first track with a data density D1 in accordance with the following relation

$$D1 > D2(R2/R1)$$

where R2 is a radius of the second track and R1 is a radius of the first track;

the write means being constructed to record data on the first and second tracks in the form of data bits separated by

clock bits, the apparatus further comprising read means for selectively reading data from the first and second tracks, the read means including separator means for separating the data bits and the clock bits;

the read means comprising pickup means for picking up the data bits and clock bits from the first and second tracks, the separator means comprising data gate means, clock gate means and window signal generator means for generating clock window signals in synchronism with clock bits picked up by the pickup means and data window signals in synchronism with data bits picked up by the pickup means, the window signal generator means feeding the data window signals to the data gate means which gate the data bits therethrough from the pickup means in response to the data window signals and feeding the clock window signals to the clock gate means which gate the clock bits therethrough from the pickup means in response to the clock window signals.

4,357,636

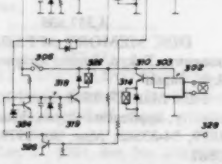
MAGNETIC TAPE DEVICE

Chiaki Taketomi; Tadao Miura; Keiji Akiba, and Koji Hirose, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 927,637, Jul. 24, 1978, abandoned. This application Jan. 25, 1980, Ser. No. 115,199

Int. Cl.³ G11B *15/12, 27/02*

U.S. Cl. 360—62 **7 Claims**



1. A record-playback system including first and second independently operable recording medium transport means for receiving and separately driving associated separate recording mediums; first and second record-playback means respectively for either recording signals upon or detecting signals from said recording mediums associated with said first and second transport means; first and second signal directing circuits connected respectively to said first and second recording playback means; first and second manually operable operating mode selection means respectively associated with said first and second signal directing circuits each for respectively selecting either a recording mode of operation in the associated signal directing circuit where a signal to be recorded is fed through the associated signal directing circuit to the associated record-playback means for recording on the associated recording medium or for selecting a reproducing mode of operation therefor where signals recorded on the associated recording medium are reproduced and fed to the associated signal directing circuit; first and second control means operable in cooperation with each other to insure that if both said first and second operating mode selecting means are operated to call for a recording or reproducing mode only a predetermined transport means, signal directing circuit and associated record-playback means will be so operated while the other circuit is operable in the other mode unless another manually operable means is operated; third control means for detecting the movement of the transport means associated with said predetermined signal directing circuit; fourth control means responsive to the ending of the movement in the latter transport means for starting the movement of the other transport means; manually operable fifth control means for presetting an uninterrupted recording or reproducing mode of operation of said first and second directing circuits when a recording or reproducing mode of operation is completed on the recording medium on said latter transport means, the signal direction circuit associated with said other transport means then initiating a similar recording or reproducing mode of operation when said first and second manually operable operating mode selection means had been operated to effect an identical recording or reproducing mode of operation; and means for operating the fourth control means only when said first and second operating mode selection means are operated to select the same operating modes at the same time after the fifth control means is operated.

4,357,637

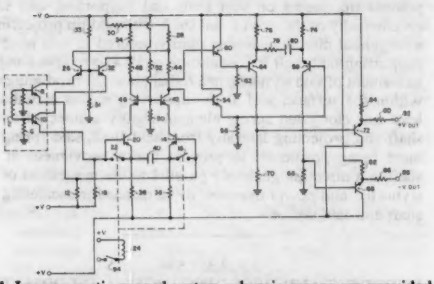
PREAMPLIFIER CIRCUIT

Ted B. Gilbert, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 29, 1981, Ser. No. 288,098

Int. Cl.³ G11B *5/45, 5/02*

U.S. Cl. 360—65 **10 Claims**



1. In a magnetic record system wherein means are provided for selectively driving the record member at any of a number of different speeds, and having a playback transducer, a wide frequency band preamplifier, said preamplifier comprising:

a first stage differential amplifier having input terminals connected to said transducer, said first stage amplifier being selectively configured in either of two operational modes;

in a first said operational mode, said first stage amplifier being configured in a differential cascode amplifier;

an output stage differential amplifier, said first stage differential cascode amplifier, in said first operational mode having an output connected as differential input to said output stage differential amplifier,

in a second said operational mode, said first stage amplifier being configured as a differential emitter-follower amplifier; and

an intermediate stage differential cascode amplifier, in said first operational mode, said intermediate stage cascode amplifier being biased to cut-off, in said second operational mode, said emitter-follower amplifier having a differential output connected as input to said intermediate stage differential cascode amplifier;

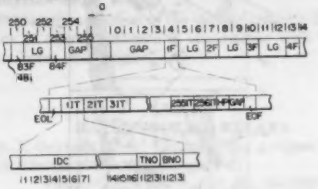
said intermediate stage differential cascode amplifier, in said second operational mode, having an output connected as input to said output stage differential amplifier.

4,357,638

INDEX INFORMATION RECORDING METHOD FOR PICTURE INFORMATION FILING SYSTEM

Tomohisa Yoshimaru, and Kazuhiko Iida, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 20, 1980, Ser. No. 198,468
Claims priority, application Japan, Oct. 23, 1979, 54-136642
Int. Cl.[3] G11B *27/32*
U.S. Cl. 360—72.2 6 Claims



1. In a system in which given information is recorded on or reproduced from a recording medium, which has a plurality of information recording tracks having a plurality of information recording blocks and at least one index recording track for recording index information peculiar to corresponding information other than the index information, these tracks extending in the direction of running of said recording medium, by moving said recording medium and moving a recording/reproducing head in a direction perpendicular to the direction of movement of said recording medium to a position corresponding to a selected information recording track, a method of recording index information comprising the steps of:

temporarily memorizing said index information in a memory means in unit index information groups each consisting of a predetermined number of index information items;

adding a peculiar code to the last index information item in the last index information group in said memory means, said peculiar code being given only in the last index information group; and

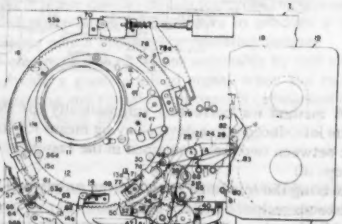
recording said individual index information groups in predetermined blocks of said index information recording track, each index information group in each particular block.

4,357,639

MAGNETIC TAPE LOADING APPARATUS

Hideki Hama, Tokyo, and Yoichi Hishijima, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 4, 1980, Ser. No. 156,412
Claims priority, application Japan, Jun. 6, 1979, 54/69966; Jun. 19 1979, 54-76326
Int. Cl.[3] G11B *15/66, 5/52*
U.S. Cl. 360—85 16 Claims



1. In a magnetic recording and/or reproducing apparatus of the type having a cylindrical tape guide drum with at least one rotary magnetic head adapted to move in a circular path substantially coinciding with the outer circumferential surface of said drum, and holder means spaced from said guide drum for receiving tape supply means containing a magnetic tape, tape loading and unloading means comprising

a support member extending around said guide drum and being rotatable in a plane that is inclined with respect to a plane passing through said tape in said tape supply means;

first tape guiding means movable in a plane which is inclined relative to said plane of rotation of said support member and being actuable by said support member for wrapping a portion of said tape about a first portion of the outer circumferential surface of said tape guide drum; and

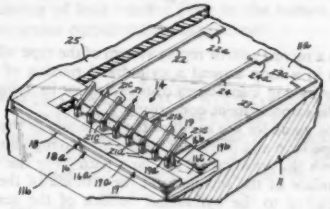
second tape guiding means actuable by said support member and acting on said tape following the wrapping thereof about said first portion of the outer circumferential surface for further wrapping said portion of said tape about a contiguous second portion of the outer circumferential surface of said tape guide drum.

4,357,640

THIN FILM MAGNETIC TRANSDUCER

John E. Heinz, Plymouth, and M. Grant Albrecht, Minneapolis, both of Minn., assignors to Nortronics Company, Inc., Minneapolis, Minn.

Filed Oct. 24, 1980, Ser. No. 200,385
Int. Cl.[3] G11B *5/20, 5/22*
U.S. Cl. 360—119 11 Claims



1. A thin film magnetic transducer comprising:

(a) a non-magnetic substrate;

(b) first and second superimposed core planar pieces adjacent said substrate, each being mirror images of each other and each comprising a magnetic thin film having spaced front and rear portions, first and second side portions, said front and rear portions being magnetically coupled to said first side portion, said front portion having front and rear edges which extend from said first side portion toward said second side portion, but discontinuous with said second side portion,

a first width defined as the distance between front and rear edges on said front portion of first core piece,

a second width defined as the distance between front and rear edges on said front portion of second core piece,

a track width of the transducer defined generally as the distance along the front edge from the discontinuity in the first core piece to the discontinuity in the second core piece;

(c) a thin film non-magnetic gap spacer between said superimposed front portions and bounded by said discontinuities to form a transducer gap therebetween;

(d) a conductive coil having multiple turns positioned around said rear portions of said core pieces comprising a first plurality of spaced thin film coil turn forming pieces disposed on said substrate and residing between said substrate and one of said core pieces, a plurality of riser portions extending upwardly from the ends of said first coil forming pieces, a plurality of second thin film coil turn forming pieces on the other of said core pieces and connected to the remaining ends of of said risers to form a continuous coil;

(e) layers of thin film insulation disposed between said coil and said core pieces; and

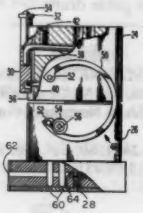
(f) means for establishing a uniform flux within said transducer gap including providing an increasing first width across said front edge on said first core piece while providing a decreasing second width.

4,357,641

TAPE GUIDE WITH PATH LOCATION AND ATTITUDE ADJUSTMENTS

William A. Dischert, Jobstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 9, 1980, Ser. No. 138,736
Int. Cl.³ G11B *15/16*
U.S. Cl. 360—130.23 **7 Claims**



1. In a record and/or replay system of the type wherein tape travels in a loop around a cylindrical portion of a rotating scanner having transducers disposed about its cylindrical surface, the improvement comprising:

a tape guide for use at either the beginning or the end of the tape loop and including means for making adjustments to both the location of the tape path over the cylindrical surface of the scanner and the attitude of the tape path relative to the cylindrical surface of the scanner, in a common direction with said adjustments being facilitated by said common direction being substantially parallel to the plane of the tape; said tape path location adjustment is accomplished with a tape guide post having a tape edge guide affixed thereto and said tape guide post is slidably affixed on a mounting block to adjust the location of said tape edge guide along the axial direction of said tape guide post.

4,357,642

TAPE CASSETTE WITH HOUSING PROVIDING SELECTIVE REMOVAL OF ONLY ONE TAPE REEL

Fred C. Bolick, Jr., Atlanta, Ga., assignor to Lanier Business Products, Inc., Atlanta, Ga.

Continuation of Ser. No. 93,165, Nov. 13, 1979. This application Jun. 29, 1981, Ser. No. 278,097
Int. Cl.³ G11B *15/60, 23/02*
U.S. Cl. 360—132 **1 Claim**

1. A tape carrier for use in a tape recording-reproducing apparatus, comprising:

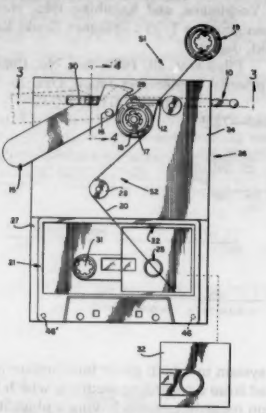
a supply reel carrying a length of a recording medium;

retaining means for securing said supply reel in position for rotation about a hub within said tape carrier;

a pressure pad in communication with the tape extending from said supply reel, said pressure pad positioned in said tape carrier to cause said tape in communication with said pressure pad to be operatively accessible to a tape recording-reproducing apparatus;

a take-up reel positioned to receive tape which has been withdrawn from said supply reel and passed in communication with said pressure pad; and

an access means comprising an opening in said tape carrier for providing sufficient external access to said take-up reel to permit said take-up reel to be removed from said tape carrier without disturbing the path of said tape in communication with said pressure pad while said retaining means continues to prevent removal of said supply reel from said position for rotation about said hub,



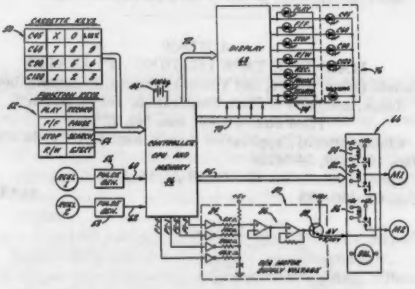
said access means further comprising a removable cover means for covering said take-up reel when said tape carrier is in condition for operation and which may be removed to permit access to said take-up reel.

4,357,643

METHOD AND APPARATUS FOR CORRECTING AUTOMATICALLY THE DESIGNATION OF TYPE OF TAPE CARRIER

Stephane M. d'Alayer de Costemore d'Arç, Brussels, Belgium, assignor to Staar S.A., Belgium

Filed Dec. 21, 1979, Ser. No. 105,980
Claims priority, application Belgium, Dec. 27, 1978, 873073
Int. Cl.³ G11B *27/36*
U.S. Cl. 360—137 **21 Claims**



1. A method for correcting automatically for the type of cassette introduced into a device having means for transferring a tape between two reels contained in the cassette, comprising the steps of:

measuring the rotational speeds of the supply reel and of the take-up reel;

establishing the ratio of these measurements independently of the speed and the direction of movement of the tape;

storing reference data representing the characteristics of different types of reels and tapes in the device;

releasing the reference data corresponding to one selected type of reel and tape;

generating intermediate signals representing the said ratio;

processing these intermediate signals and the reference data

released and producing output signals representing the instantaneous position of the tape with respect to one of its ends for said selected type of reel and tape, said method including the further steps of:

comparing at least two positions of the tape with one another;

generating a difference signal which is representative of this comparison;

comparing this difference signal for correspondence with a reference value; and

correcting the selection of the type of cassette if required by lack of correspondence in accordance with the result of this latter comparison.

4,357,644

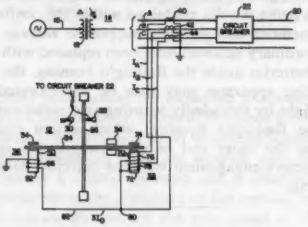
RATIO GROUND RELAYS

Warren J. Schmidt, Coral Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 20, 1981, Ser. No. 245,768

Int. Cl.³ H02H *3/26*

U.S. Cl. 361—76 **7 Claims**



1. An electromechanical ratio ground relay for detecting open phases and phase-to-ground faults in a three-phase electrical power system, with the ratio characteristic being achieved by electromechanical balancing of separate, opposing torques, comprising:

an electroresponsive induction device having an electroconductive armature mounted for movement;

means providing first, second and third phase current signals responsive to the three phase currents in the three-phase electrical power system, and a zero sequence signal responsive to the zero sequence current;

first electromagnetic means responsive to the zero sequence signal for providing a magnetic flux which acts upon said armature to produce an operating torque which varies as a function of the zero sequence current;

second electromagnetic means responsive to at least certain of the phase current signals for providing a magnetic flux which acts upon said armature to produce a restraining torque which opposes the operating torque;

and electrical contact means actuatable by said armature to provide a predetermined signal when the ratio of said operating and restraining torques is unbalanced in favor of the operating torque.

4,357,645

SYSTEM FOR DETECTING FAULTY SCR'S

Clarence D. Lilienthal, Eden Prairie, Minn., assignor to Control Concepts Inc., Minnetonka, Minn.

Filed May 13, 1981, Ser. No. 263,153

Int. Cl.³ H02H *3/08*

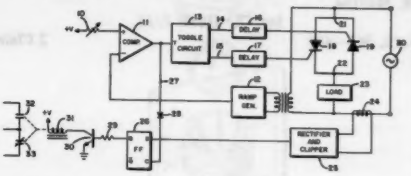
U.S. Cl. 361—93 **4 Claims**

2. A load current controller apparatus, comprising:

(a) at least one silicon controlled rectifier, having an anode electrode, a cathode electrode and a gate electrode, said anode and cathode electrodes adapted to be connected in series between alternating current supply terminals and a load whose current is to be controlled;

(b) means adapted to be coupled to said alternating current supply terminals for generating a ramp voltage signal synchronized with the alternating current supply;

(c) means for comparing said ramp voltage signal to a predetermined set-point reference voltage, said comparing means providing an output voltage when the ramp voltage exceeds said set-point reference voltage;



(d) toggling means for successively and alternately coupling said comparator output voltage to said gate electrode of said silicon controlled rectifier;

(e) means for sensing the level of current flowing through the load; and

(f) means coupled to said sensing means for indicating the existence of load current prior to the instant that said comparator output voltage is produced.

4,357,646

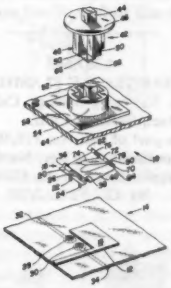
CAPACITIVE KEYSWITCH WITH OVERTRAVEL MECHANISM ON MOVEABLE PLATE

John K. McVey, Bensenville, and Stanley E. Filipiak, Chicago, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 21, 1981, Ser. No. 226,654

Int. Cl.³ H01G *5/16*

U.S. Cl. 361—288 **4 Claims**



1. A capacitive keyswitch comprising a fixed flat capacitive plate in a first plane, a flat, moveable capacitor plate hinged at one end to project in a second plane and to move toward a parallel position with respect to said fixed plate when an actuating force is applied to said moveable plate, an actuating plunger for applying said force to said moveable plate, return means for returning the plunger to its unactuated position, a bent-up section at the free end of said moveable plate which projects in a third plane, and an overtravel tab that is separated from the portion of said moveable plate that lies in said second plane and from said bent-up section everywhere except for a segment that joins said bent-up section at the free-end of said moveable plate, said tab being bent to project in a fourth plane, said bent-up section thereby providing torsion hinging action for said overtravel tab and acting to minimize deformation of

said moveable plate when said actuating plunger applies an actuating force thereto.

4,357,647

PRINTED CIRCUIT BOARD

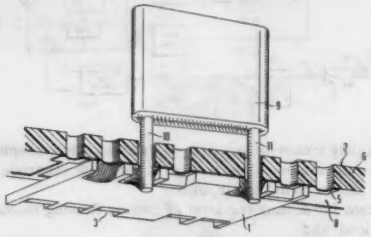
Hans Hadersbeck, and Hubert Zakier, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 31, 1980, Ser. No. 202,610

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949184

Int. Cl.³ H05K *1/18*

U.S. Cl. 361—400 2 Claims



1. A temperature-stable component for mounting on a printed circuit board having a plurality of solder-clad holes therein, said holes being selectively interconnected by printed conductor paths on said circuit board, said temperature-stable component comprising a support plate having longitudinal sides with a plurality of recesses therein for partially surrounding said solder-clad holes in said circuit board for electrical and mechanical connection thereto by soldering, each said recess having a lateral edge disposed parallel to said longitudinal sides, said lateral edge being beveled with respect to a surface of said support plate and further being coated with a metal layer having a good electrical conductivity extending from said lateral edge to said surface of said support plate.

4,357,648

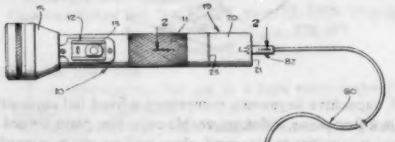
RECHARGEABLE FLASHLIGHT

Norman C. Nelson, Newberry Springs, Calif., assignor to Kel-Lite Industries, Inc., Barstow, Calif.

Continuation-in-part of Ser. No. 119,787, Feb. 8, 1980, abandoned, and a continuation of Ser. No. 5,322, Jan. 22, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 237,451

Int. Cl.³ F21L *7/00*

U.S. Cl. 362—183 11 Claims



1. A tail cap assembly for use in converting an ordinary flashlight into a rechargeable flashlight, said tail cap assembly comprising, in combination:

a metal cap member of generally cup-shaped configuration, having an open end and a closed end wall, said cap member being threaded at its open end;

a switch means supported within said metal cap member and having a dual-contact female switch receptacle accessible through said end wall for the insertion of a male power plug therein;

a compression spring supported substantially concentric to said cap member, having an inner end disposed within said cap member and an outer end which protrudes from the open end of said cap member;

conductive means including said switch means within said metal cap member adapted to provide a normal current pathway between said cap member and the inner end of said compression spring;

said switch means being responsive to the insertion of a power plug into said switch receptacle to interrupt said normal current pathway;

charging circuit means including at least one rectifier and current regulating means disposed within said cap member and cooperating with said switch means when said normal current pathway is interrupted for supplying a charging voltage between said cap member and said inner end of said compression spring; and

said switch means, charging circuit means, and conductive means being wholly contained within the confines of said cap member and securely supported therein, whereby after ordinary batteries have been replaced with rechargeable batteries inside the flashlight housing, the entire recharging apparatus may then be incorporated into the flashlight by threadedly securing said metal cap member to the flashlight housing, which action concurrently presses the outer end of said compression spring into conductive engagement with the rearmost battery in the housing.

4,357,649

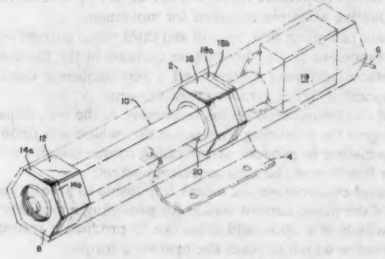
SHOCK MOUNTING FOR LASER

Eugene F. LaCroix, 5611-240th SE., Woodinville, Wash. 98072

Filed Jul. 21, 1980, Ser. No. 170,936

Int. Cl.³ F21S *3/00*; H01S *3/03*

U.S. Cl. 362—217 7 Claims



1. An omni directional shock absorbing mounting for a laser including a laser head and the power supply comprising:

an exterior shell of a length greater than that of the laser head and an internal dimension greater than the diameter of the laser head;

at least two impact absorbing shock plates configured to intimately fit within the shell, reinforcing same, secured to the shell and extending inwardly thereof to terminate in a circular opening having a diameter greater than that of the laser head and surrounding said head, whereby the laser head can move without contacting the shock plates;

shock reduction cushion means adjacent the shock plate, contiguous with the laser head and the exterior shell whereby a shock delivered to the shell will not be trans-

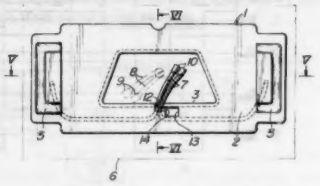
ferred to or significantly change the placement of the head.

4,357,650

LICENSE PLATE HOLDER

Hisaei Kano, Tokorozawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 7, 1980, Ser. No. 194,787
Claims priority, application Japan, Oct. 9, 1979, 54/131240
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—234 **2 Claims**



1. A license plate holder for mounting a license plate on a rear panel of a vehicle body, comprising a plate holder member which affords a flat front surface to which the license plate and at least one illuminating lamp are secured, said plate holder member having a central opening and a reinforcing flange which extends along the periphery of the central opening and protrudes rearwardly toward the rear panel of the vehicle body, said illuminating lamp being connected with a lead wire having a connector at its free end, wherein said plate holder member is formed with a first opening on said front surface, which is wide enough for passing therethrough said connector of the lead wire, a second opening at the intersection of the front surface and the reinforcing flange, which is wide enough for passing therethrough said lead wire, but which prevents passage of said connector, said first and second openings being in communication with each other, whereby said lead wire is passed from the rear side of the plate holder member through the first opening, and moved into the second opening such that the connector of the lead wire can be connected in said central opening with a connector of a lead wire which is passed through said rear panel of the vehicle body into the interior thereof.

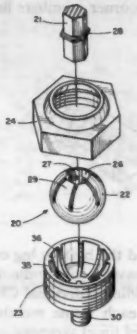
4,357,651

RECTANGULAR SEAL BEAM LAMP AND UNIVERSAL SUPPORT ASSEMBLY

William R. Mayer, Rochester, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Dec. 23, 1980, Ser. No. 220,248
Int. Cl.³ F21V *21/29*
U.S. Cl. 362—275 **11 Claims**

1. A seal beam lamp unit for vehicles, comprising; a generally rectangular plastic reflector having a mirrorized paraboloidal inner reflective surface, a halogen bulb mounted within the reflector, a generally rectangular lens mounted to the reflector, said reflector having a rectangular portion surrounding and engaging the lens, a universal shock absorbing support for the lamp unit that provides absorption in all directions including a post formed integrally with the reflector, a compressible spherical ball member having a recess therein receiving the reflector post, and a lamp support assembly surrounding the ball member to selectively compress the spherical ball to position the lamp unit as desired.

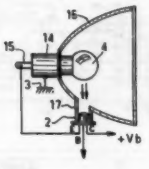


4,357,652

LIGHT PROJECTOR EQUIPPED WITH A LOW-VOLTAGE INCANDESCENT LAMP AND INCORPORATING A RELAY

Jean-Pierre R. Coulmance, Osny, and Jean-Pierre Ricouard, Suresnes, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,953
Claims priority, application France, Jun. 29, 1979, 79 16971
Int. Cl.³ F21V *23/04*
U.S. Cl. 362—276 **11 Claims**



1. A light projector comprising a low-voltage incandescent lamp, a shell which is internally coated with a reflecting metallic layer and which includes a socket for the lamp comprising at least two electric contacts, a phototransistor, means including said two electric contacts for connecting the lamp and phototransistor in series to a source of voltage, the phototransistor being arranged so as to intercept a fraction of the luminous flux emitted by said lamp, and means for switching the base of the phototransistor to the source of voltage.

4,357,653

CHRISTMAS LIGHT FRAME

Michael J. Kovacs, 491 Saginaw Ave., Calumet City, Ill. 60409

Filed Aug. 18, 1980, Ser. No. 178,817
Int. Cl.³ F21V *21/00*
U.S. Cl. 362—388 **3 Claims**

1. A frame for displaying strands of light bulbs and tinsel in rectangular configuration for window decoration comprising:

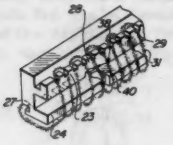
(a) side frame members of equal length in parallel and side-by-side relation;

(b) top and bottom frame members of equal length in parallel side-by-side relation and in over-and-under relation with said side members;

(c) four separate and identical corner members having means

for fixed interchangeable connection with the respective ends of each of the adjoining side, top and bottom frame members;

(d) each of said side, and top and bottom frame members and each of the four corner members having channel-shaped



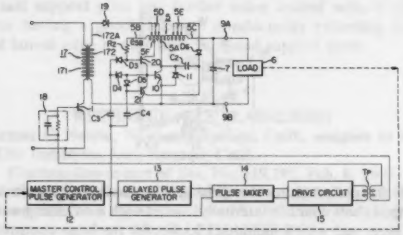
cross sections, and the bottom leg of the channel in each frame member having longitudinally spaced bores for receiving and holding individual Christmas light sockets;

(e) and means on each frame member for engaging and holding a strand of tinsel wrapped spirally over the inner face of the frame member for the entire length thereof.

4,357,654
DC—DC CONVERTER

Tsuneo Ikenoue, 14-6, Ichiban-cho 1-chome, Sendai-shi, Miyagi, Japan; Shin-yng Liu, Sendai, Japan; Shuichi Umemoto, Yokohama, Japan, and Naoki Arai, Machida, Japan, assignors to Tsuneo Ikenoue; Tohoku Ricoh Co., Ltd., both of Miyagi; Stanley Electric Co., Ltd. and Micron Kiki Co., Ltd., both of Tokyo, all of, Japan

Filed Dec. 16, 1980, Ser. No. 216,924
Claims priority, application Japan, Dec. 19, 1979, 54-165012
Int. Cl.³ H02M *3/155, 3/335;* **H02P** *13/32*
U.S. Cl. 363—21 **5 Claims**



1. A transformer isolation type forward DC—DC converter of the type in which an inductance element stores energy when a main switching transistor connected to the primary coil of a main transformer is turned on and releases the stored energy when the main switching transistor is turned off, comprising:

a semiconductor active element which is used as a flywheel element which is turned off when said main switching transistor is turned on, but is turned on when said main switching transistor is turned off so as to provide the path for the current established by said release of said stored energy;

an auxiliary diode connected in parallel with said semiconductor active element in the same direction;

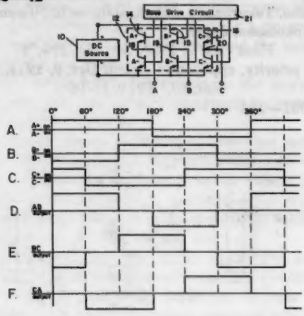
said main transformer having a secondary coil connected through a rectifying element to said inductance element which in turn is connected to the parallel combination of said auxiliary diode and said semiconductor active element; and

a means for applying to the control terminal of said semiconductor active element a switching signal substantially synchronized with the operation of said main switching transistor, thereby causing said semiconductor active element to turn on and off.

4,357,655
THREE-PHASE INVERTER

William H. Beck, Rancho Palos Verdes, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed May 12, 1981, Ser. No. 262,861
Int. Cl.³ H02M *1/12*
U.S. Cl. 363—42 **13 Claims**



1. A polyphase inverter, comprising:

a direct current source of electrical energy;

a plurality of switching means connected to said direct current source;

gating means for selectively actuating said switching means for selected periods of time to produce a six-step output waveform having a predetermined fundamental frequency in each of a plurality of phases;

means, operatively associated with said gating means, for varying said selected periods of time to control the percentage of selected harmonics in said six-step output waveforms;

means for maintaining the amplitude of the fundamental frequency of said six-step output waveforms at a substantially constant volts/Hertz value;

modulating means for varying said selected periods of time to produce notches in said six-step output waveforms, said notches being centered at predetermined locations in said six-step waveforms, said notches having predetermined width, and

said polyphase inverter providing six-step output waveforms to a first phase, a second phase, and a third phase, said second phase having a phase angle of 120° relative to said first phase, said second phase having a phase angle of 240° relative to said first phase and wherein said notches in said first phase are symmetrically located about the 75°, 105°, 255°, and 285° points in the six-step output waveform thereof with the notches in the output waveforms of said second and third phases being out of phase with the notches in said first phase by 120° and 240°, respectively.

4,357,656
METHOD AND APPARATUS FOR DISABLING AND DIAGNOSING CACHE MEMORY STORAGE LOCATIONS

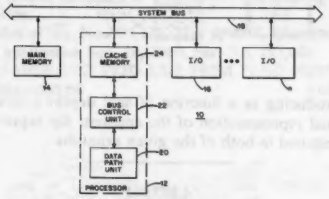
Warren L. Saltz, Marlboro, and Anthony S. Vezza, Chelmsford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 9, 1977, Ser. No. 858,923
Int. Cl.³ G06F *9/30, 13/06*
U.S. Cl. 364—200 **5 Claims**

1. In a data processing system having at least a main memory containing a plurality of addressable main memory storage locations and a processor for executing program instructions

utilized to control the operation of the data processing system, said processor having a cache memory containing a plurality of addressable cache memory storage locations, said cache memory capable of comparing signals representative of address information indicative of an addressable main memory storage location addressed by the processor during execution of a program instruction with signals representative of address information indicative of an addressable cache memory storage location addressed by the processor during the execution of a program instruction for determining whether the data processing system would access the addressable main memory storage location or would access the addressable cache memory storage location, a method for disabling predetermined ones of said plurality of addressable cache memory storage locations comprising the steps of:

(a) generating signals representative of predetermined ones of said plurality of addressable cache memory storage locations intentionally desired to be disabled by an operator of the data processing system;



(b) comparing said signals representative of said predetermined ones of said plurality of addressable cache memory storage locations with signals representative of an addressable main memory storage location being addressed by the processor during the execution of a program instruction; and

(c) causing said data processing system to access said addressable main memory storage location being addressed by the processor during the execution of a program instruction when said signals representative of said predetermined ones of said plurality of addressable cache memory storage locations are in a predetermined fixed relationship with said signals representative of the addressable main memory storage location being addressed by the processor during execution of a program instruction, thereby intentionally disabling said predetermined ones of said plurality of addressable cache memory storage locations.

4,357,657

FLOPPY-DISK INTERFACE CONTROLLER

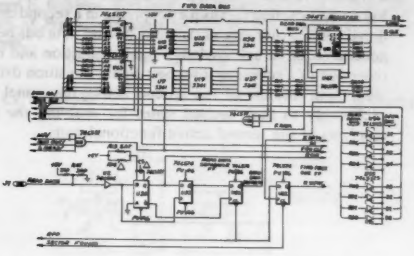
Michael W. Fellinger, Boulder, Colo., assignor to Monolithic Systems, Corp., Englewood, Colo.

Filed Aug. 24, 1979, Ser. No. 69,302

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **11 Claims**

8. An information transfer system for connection between a bus and a mass storage device, comprising an intermediate storage device for storing a block of data of determined length and having an input and an output, a register having a first input coupled to the output of said intermediate storage device, a second input coupled to said mass storage device, a first output coupled to said mass storage device, and a second output, means selectively coupling said bus and second output to the input of said intermediate storage device, and gate means



for selectively applying the output of said intermediate storage device to said bus.

4,357,658

SYSTEM FOR THE ASYNCHRONOUS TRANSPORTING OF DATA BETWEEN ACTIVE FUNCTIONAL UNITS

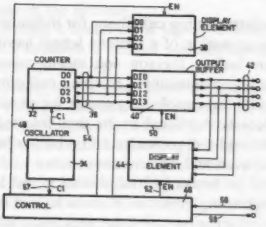
Eduard M. A. M. van der Ouderaa, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,410

Claims priority, application Netherlands, Feb. 14, 1979, 7901156

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—200 **5 Claims**



1. A device comprising:

at least a first and a second active functional unit;

said functional units interconnected by a data bus line having a plurality of parallel single-bit data lines, and by a first single-bit control line for communicating request signal transitions produced by a first transition generator from the first active functional unit to the second active functional unit, and by a second single-bit control line for communicating acknowledge signal transitions produced by a second transition generator from the second active functional unit to the first active funcional unit;

each functional unit being connected to each single-bit data line both via one data receiver and via one output circuit per single-bit data line, said output circuit having at least:

one first state for imposing a respective first data value at a low impedance on the data bit line connected thereto and having furthermore one second state for forming a second data value at a high impedance on the data bit line connected thereto;

wherein furthermore said first active functional unit has first cycling means for supplying in a first operational mode a plurality of data bits on said data bus before generation of a request signal transition and upon reception of a subsequent acknowledge signal transition driving the output circuits of the first active functional unit exclusively to

their second states for enabling the data receivers of the first active functional unit;

and wherein furthermore said second active functional unit has second cycling means for supplying in a second operational mode a plurality of data bits on said data bus before generation of an acknowledge signal transition and upon reception of a subsequent request signal transition driving the output circuits of the second active functional unit exclusively to their second states for enabling the data receivers of the second active functional units.

4,357,659

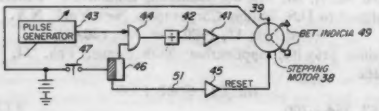
ROULETTE BETTING CALCULATOR

Robert L. Nathans, 36 Stag Dr., Billerica, Mass. 01821

Filed Oct. 15, 1979, Ser. No. 84,676

Int. Cl.³ G06F *15/28*

U.S. Cl. 364—412 **19 Claims**



1. A roulette betting calculator for indicating favorable bets during the operation of a roulette wheel having a wheel head with target indicia thereon and means associated with said wheel head for containing a spinning ball comprising:

a. time interval establishing means for producing time interval data proportional to the time interval between a first instant said ball passes by a first particular portion of said wheel head and a later instant when said ball passes by a second particular portion of said wheel head; and

b. bet indicating means responsive to said time interval data for producing favorable bet indicating information which is a function of the value of said time interval data.

4,357,660

FORMATION DIP AND AZIMUTH PROCESSING TECHNIQUE

Vincent R. Hepp, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 1, 1974, Ser. No. 465,951

Claims priority, application United Kingdom, May 1, 1973, 20610/73; Apr. 1, 1974, 14306/74

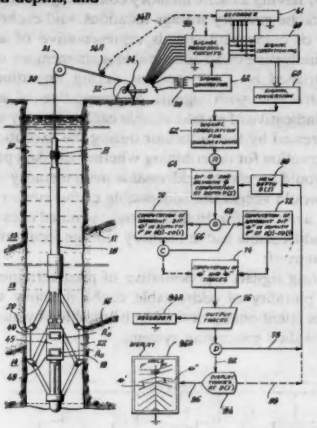
Int. Cl.³ G01V *3/18*

U.S. Cl. 364—422 **46 Claims**

1. A method of automatically producing with a machine three-dimensional representations of formation features from measurements indicative of dip and azimuth in a borehole beneath the earth's surface, comprising:

(a) computing apparent dip representations in a given azimuth from dip and azimuth measurements of formation features at various depths;

(b) computing apparent dip representations in a different given azimuth from said dip and azimuth measurements at said depths; and



(c) producing as a function of said depths a three-dimensional representation of the apparent dip representations computed in both of the given azimuths.

4,357,661

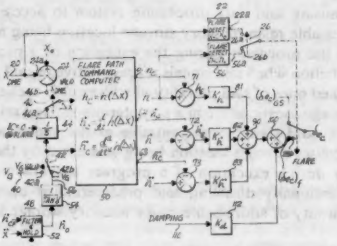
AIRCRAFT LANDING CONTROL SYSTEM

Antonius A. Lambregts, Renton, and Rolf Hansen, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 22, 1980, Ser. No. 123,529

Int. Cl.³ G05D *1/12*; G06G *7/70*; B64C *13/18*

U.S. Cl. 364—430 **8 Claims**



1. Apparatus for generating flare path control signals for an aircraft comprising:

ground position means for producing a ground position signal, Δx, representative of the position of the aircraft relative to a fixed reference point on the ground;

ground speed means for producing a ground speed signal representative of the ground speed of the aircraft;

command means for processing said ground position signal and said ground speed signal in a predetermined manner to produce:

(a) an altitude command signal, h_C;

(b) a vertical velocity command signal, h_C; and

(c) a vertical acceleration command signal, h_C, whereby said h_C command signal defines the desired flare path of the aircraft and said h_C and h_C command signals represent desired sink rate and vertical acceleration respectively, corresponding to said desired flare path;

sensor means for producing signals h, ḣ and ḧ representative

of the aircraft's actual altitude relative to the runway, vertical velocity and vertical acceleration, respectively;

subtracting means for subtracting each actual aircraft signal h, ḣ and ḧ from the corresponding commanded value h_c, $\dot{h}_c$ and $\ddot{h}_c$ to produce error signals h_ϵ, $\dot{h}_\epsilon$ and $\ddot{h}_\epsilon$, respectively; and

aircraft control means for processing said error signals h_ϵ, $\dot{h}_\epsilon$ and $\ddot{h}_\epsilon$ and control the aircraft to the command flight path.

4,357,662

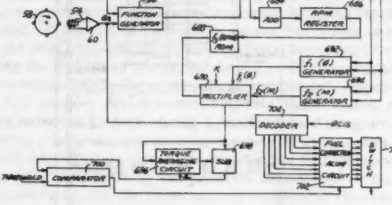
CLOSED LOOP TIMING AND FUEL DISTRIBUTION CONTROLS

John J. Schira, Westland, and Chun-Keung Leung, Farmington, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 904,131, May 8, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,400

Int. Cl.³ F02B *3/02*; F02D *5/00*; F02M *51/00*; F02P *5/14*

U.S. Cl. 364—431.08 **116 Claims**



1. A closed loop timing control for an internal combustion engine having at least one combustion chamber delivery means for delivering a combustible mixture of air and fuel to said at least one combustion chamber and a rotating element receiving rotational torque impulse generated in response to the burning of the air/fuel mixture in the combustion chamber, the closed loop timing control comprising:

first sensor means for generating reference signals indicative of at least one rotational position of the engine's rotating element;

second sensor means for generating a velocity signal indicative of the rotational velocity of the rotating element as a function of the rotating element's angular position;

timing generator means responsive to said reference and velocity signals for generating timing signals indicative of the time fuel is to be delivered to the combustion chamber such that the torque impulse generated by the burning of the air/fuel mixture imparts a maximum rotational velocity to the rotating member at a predetermined angle with respect to said reference signal;

third sensor means for generating a third signal indicative of at least one operational parameter of the engine; and

means responsive to said third signal, said reference signals and said timing signal for generating injection signals actuating said delivery means to deliver a quantity of fuel to the combustion chamber determined by said third signal at a time determined by said timing signal.

4,357,663

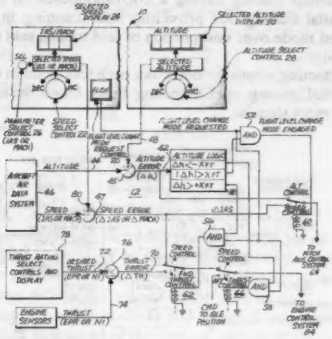
METHOD AND APPARATUS FOR AIRCRAFT PITCH AND THRUST AXES CONTROL

Richard E. Robbins, Kirkland, and Robert D. Simpson, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 3, 1979, Ser. No. 99,686

Int. Cl.³ G05D *1/08*

U.S. Cl. 364—433 **8 Claims**



6. In combination in an aircraft:

a pitch axis control system;

an engine control system;

means for providing an altitude error signal representative of the difference between a desired selected altitude and the actual altitude of the aircraft;

means for providing a speed error signal representative of the difference between a desired selected speed and the actual speed of the aircraft;

means for providing an increase thrust command signal;

means for providing a decrease thrust command signal;

logic circuit means responsive to said altitude error signal for providing a descend command logic signal when said actual altitude is more than a predetermined distance above said selected altitude, a climb command logic signal when said actual altitude is more than a predetermined distance below said selected altitude, and a maintain altitude command logic signal when said actual altitude is within a predetermined distance of said selected altitude;

switching means responsive to said logic signals for coupling said speed error or said altitude error signal to said pitch axis control system and further coupling said speed error, or said increase thrust command signal, or said decrease thrust command signal to said engine control system for enabling said pitch axis control system to control said selected speed under both climb and descend command logic conditions and to control the aircraft to said selected altitude for the maintaining altitude command logic condition; and

said engine control system providing control to said increase thrust command signal for said climb command logic condition, to said decrease thrust command signal for said descend command logic condition, and to said selected speed for said maintain altitude command logic condition.

4,357,664

TRACER CONTROL SYSTEM

Ryoji Imazeki; Takao Sasaki, and Etsuo Yamazaki, all of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 25, 1980, Ser. No. 190,658

Claims priority, application Japan, Sep. 28, 1979, 54-125021

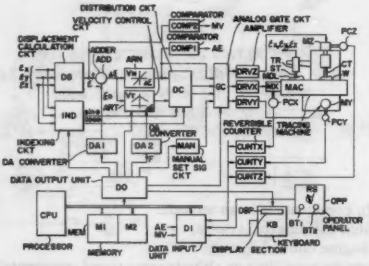
Int. Cl.³ G06F *15/46*; G05B *19/33*

U.S. Cl. 364—474 **6 Claims**

1. A tracer control system for starting deceleration control

before a jerk point in the surface configuration of a model a predetermined surface portion of which is to be traced along a trace path, said system comprising a stylus attached to a tracer head, said tracer head providing displacement signals corresponding to the displacement of said stylus with respect to said tracer head, and said system including means for calculating a composite displacement signal and direction-of-displacement signals from said displacement signals, said trace path being constituted of plural sequential tracings of said tracer head for scanning the portion of said model to be traced, each said sequential tracing having a correspondence to the prior sequential tracing, for providing said scanning in a predetermined mode over said portion of said model, said system comprising;

detecting means for detecting each jerk point in each sequential tracing, said detecting being based on said displacement signals;



a memory for storing a predetermined portion of the positional information of each said detected jerk point until at least during the next one of said sequential tracings in the trace path;

speed reduction means for reduction of the trace velocity at a predetermined interval before the respective positional information of each jerk point stored in the memory as a result of having been detected at least during the prior sequential tracing;

updating means, when a jerk point is detected in a sequential tracing that corresponds to a jerk point whose positional information was stored in the prior tracing, for updating the memory by replacing the previously stored positional information with the respective newly detected positional information; and

means for subsequently releasing the reduction of the trace velocity after said detection of each said jerk point.

4,357,665

PROGRAMMABLE ELECTRONIC REAL-TIME LOAD CONTROLLER PROVIDING DEMAND LIMIT CONTROL

William W. Koff, Seattle, Wash., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Dec. 27, 1979, Ser. No. 107,582

Int. Cl.³ G01R *21/00*; G06F *15/06*

U.S. Cl. 364—492 **23 Claims**

1. An electronic controller for controlling the energization states of a plurality of electrical loads, said controller comprising:

a plurality of load control circuits, each said load control circuit being adapted to be interconnected with a load, and having a load-on state when its load is to be on, and a load-off state when its load is to be off;

clock means for determining real-time;

sensor means for measuring the actual rate of power consumption by the plurality of electrical loads;

set point selector means for selecting a set point representing a desired rate of power consumption by the plurality of electrical loads;

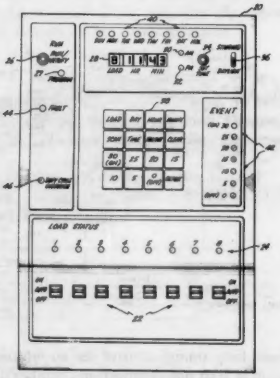
event memory means for storing a time schedule for real-time control of the plurality of electrical loads;

program memory means storing a set of program instructions;

processing means responsive to said set of program instructions for:

determining a desired real-time control output status for each load by: obtaining real-time from said clock means; obtaining said time schedule from said event memory means; and through comparison of said real-time with said time schedule, establishing an on state or an off state for each load, said on state representing a desired load-on state for the associated load control circuit and said off state representing a desired load-off state for the associated load control circuit;

determining a desired demand limit control output status for each load by: obtaining said actual power rate from said sensor means; obtaining said set point from said set point selector means; determining a shed condition when said actual power rate equals or exceeds said set point, and determining a restore condition when said actual power rate is less than said set point; establishing a demand group of the plurality of electrical loads; transferring a load into said demand group upon occurrence of an on state for the load and transferring a load out of said demand group upon occurrence of an off state for the load; establishing a shed group and a restored group within said demand group, the loads within said shed group having a shed state representing a desired load-off state for the associated load control circuit and the loads within said restored group having a restored state representing a desired load-on state for the associated load control circuit; upon determination of said shed condition, transferring at least one load from said restored group to said shed group; and, upon determination of said restore condition, transferring at least one load from said shed group to said restored group; and,



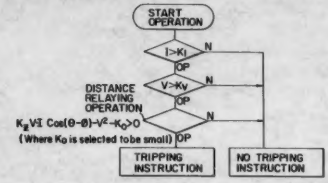
controlling the actual energization state of each load by, for each load in said demand group, placing said load control circuit for the load into said load-on state upon occurrence of said restored state for the load and into said load-off state upon occurrence of said shed state for the load, and, for each remaining load, placing said load control circuit for the load into said load-on state upon occurrence of said on state for the load and into said load-off state upon occurrence of said off state for the load.

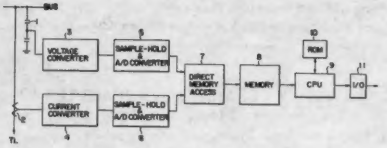
4,357,666

DIGITAL DISTANCE RELAYS

Tetsuo Matsushima, Fuchu; Ryotaro Kondow, Tokyo, and Kunio Matsuzawa, Sagamihara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 14, 1980, Ser. No. 130,526
Claims priority, application Japan, Mar. 19, 1979, 54-31016
Int. Cl.³ H02H 3/42; G06F 15/20
U.S. Cl. 364—492 6 Claims





1. In a digital distance relay for protecting an electric power line system comprising sample-hold circuits for sampling input voltage and current picked up from the power line system and holding the thus sampled values, analog-digital converters for converting the outputs of the sample-hold circuits into digital values corresponding to the input voltage and current, respectively, a first memory device memorizing said digital values, a second memory device memorizing a predetermined program, and a central processing unit for carrying out a relaying operation based on the digital values memorized in the first memory device under the control of the program memorized in the second memory device, the improvement comprising the central processing unit in cooperation with said memory devices determining whether a one of said digital values corresponding to one of said input current and said input voltage is greater than a predetermined value or not, and initiating said relaying operation when said one digital value is determined to be greater than said predetermined value.

4,357,667

ON-LINE OIL-IN-WAX MONITORING APPARATUS AND METHOD

Leonidas Skarlos, Beaumont, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,123
Int. Cl.³ G01N 11/00
U.S. Cl. 364—496 7 Claims

1. An on-line oil-in-wax monitor comprising means for periodically sampling a stream of liquid wax and oil to provide samples,

means for solidifying the wax in each sample;

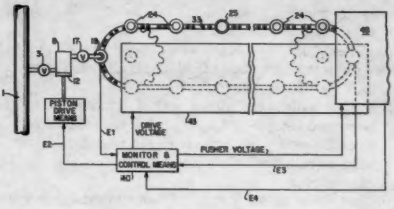
means for sensing the oil in each sample and providing a sensed oil signal corresponding thereto; and

means for indicating the oil content of the stream in accordance with the sensed oil signal, said indicating means includes

means connected to the sensing means for sampling and holding the sensed oil signal while it is a proper signal to provide a corresponding signal,

oil signal means connected to the sample and hold means and receiving direct current voltages corresponding to a standard oil signal, to the ratio of the weight of the oil standard to the weight of the sample, and to the value of 100 for providing a signal W corresponding to the percent weight of oil in the oil and wax stream in accordance with the signal from the sample and hold means and the received direct current voltages and the following equation:

$$\% \text{ Oil} = (SW/SO)(WO/WW)100,$$



where SW corresponds to the held sensed oil signal, SO corresponds to a sensed oil signal representative of an oil standard sample, WO is the weight of the oil standard sample and WW is the weight of the sample, and

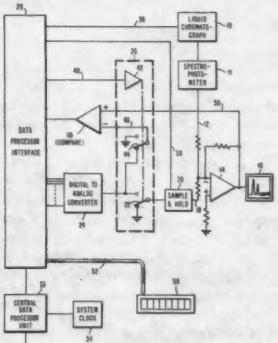
indicator apparatus connected to said oil signal means which provides an indication of the percent weight of oil in the stream in accordance with signal W.

4,357,668

BASE LINE CORRECTION METHOD AND APPARATUS

Arnold Schwartz, Bridgeport, and Edward B. Delany, Ridgefield, both of Conn., assignors to The Perkin-Elmer Corp., Norwalk, Conn.

Filed Mar. 4, 1980, Ser. No. 127,022
Int. Cl.³ G01N 31/08
U.S. Cl. 364—497 3 Claims



1. A liquid chromatography system for performing programmable solvent gradient scans, comprising

a liquid chromatograph,

a spectrophotometer connected to said chromatograph,

and apparatus for compensating for base line shift as the proportions of solvents are changed comprising

a digital data memory for storing a series of digital numbers representing the required values of base line shift correction signals at spaced time intervals during a solvent gradient program,

control means for reading out said digital numbers in sequence at spaced time intervals,

a digital-to-analog converter connected to receive said base line shift correction signal numbers and to convert each number to a corresponding base line correction signal voltage,

a sample-and-hold circuit,

switch means for connecting the voltage from said digital-to-analog converter to said sample-and-hold circuit at spaced time intervals as different base line shift correction signals are available at the output of said digital-to-analog converter, and

an offset amplifier having at least two input signals,

one input signal to said offset amplifier being received from said spectrophotometer,

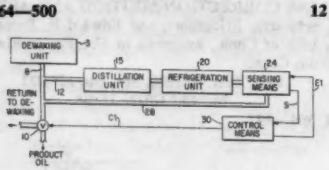
the other input signal of said offset amplifier being received from said sample-and-hold circuit for subtracting the base line shift correction signals stored within said sample-and-hold circuit from the signals received from said spectrophotometer,

the output of said offset amplifier comprising the base line shift corrected output of said liquid chromatography system.

4,357,669
MONITORING MEANS AND METHOD FOR DETERMINING THE WAX CONTENT OF OIL FROM A SOLVENT DEWAXING UNIT

Frederick C. Alverson, Port Arthur; Edward D. MacMurtrie, Port Neches, and Norman R. Odell, Nederland, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,122
Int. Cl.³ G01N *11/00*
U.S. Cl. 364—500 **12 Claims**



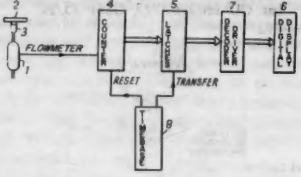
1. A system for controlling the output oil from a solvent dewaxing unit comprising means for sampling the output oil, means for removing solvent from the sample oil, means for chilling the solvent free sample oil, means receiving the chilled sample oil for determining the wax content of the sample oil and providing a signal corresponding thereto, control means coupled to the sensing means for providing a control signal of one amplitude when the signal from the sensing means is within a predetermined limit and of another amplitude when the signal from the sensing means is not within the predetermined limit, and valve means receiving the output oil from the dewaxing unit and responsive to the signal from the control means for providing the output oil as product oil when the wax content of the sample oil is within the predetermined limit and for not providing the output oil as product oil when the wax content of the sample oil is not within limit.

4,357,670
DEVICES FOR TESTING SPRAYING NOZZLES

Phillip J. McFarlane, West Wittering, England, assignor to E. Allman & Company Limited, Chichester, England

Filed Feb. 26, 1980, Ser. No. 124,699
Claims priority, application United Kingdom, Mar. 2, 1979, 7907376; Sep. 17, 1979, 7932114
Int. Cl.³ G01F *1/00*
U.S. Cl. 364—510 **24 Claims**

1. A device for individually testing the output performance of spraying nozzles of agricultural, horticultural or the like equipment while said nozzles are substantially stationary, comprising a flowmeter for generating an electrical signal representing the rate at which liquid is supplied thereto, means for receiving liquid which has emerged from one of said spraying nozzles and directing the liquid to the flowmeter, display means, electrical circuit means which, when the electrical signal from the flowmeter is applied thereto, produces an

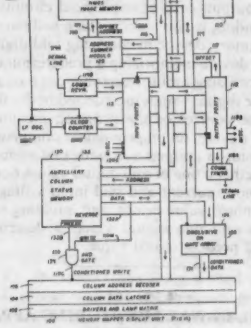


output signal which represents a measure of the performance of the nozzle which varies with the rate of supply of liquid from the nozzle, and means for applying the output signal to the display means, whereby the display means provides a display of the said measure of performance of the nozzle in the testing of said equipment for desired spraying performance.

4,357,671
DISPLAY GENERATION APPARATUS

Paul A. Miller, Scituate, Mass., assignor to Sunrise Systems, Inc., North Scituate, Mass.

Filed Jun. 17, 1980, Ser. No. 160,157
Int. Cl.³ G06F *15/20, 3/147*
U.S. Cl. 364—518 **5 Claims**



1. A display generation apparatus comprising:

(a) means defining a plurality of lamps arranged in an elongated matrix, with columns transverse to the direction of elongation of the matrix, for the purpose of displaying alphanumeric and/or graphic patterns which can be rapidly changed,

(b) a microcomputer for controlling the lamp matrix in accordance with a stored display program,

(c) means defining a similar matrix of semiconductor bit storage cells,

(d) means for causing the lamps in the matrix to respond on a lamp for bit basis to the data patterns stored as the content of the corresponding group of semiconductor bit storage cells,

(e) said storage cells being arranged to respond to the microcomputer's busses and control signals in such a fashion tha the microcomputer can load column data patterns intended to effect change in the state of the lamps in a particular column by storing the data pattern at a memory address

or output port address corresponding to the position of the designated column in the overall array of lamp columns, according to a selected address to column position translation function,

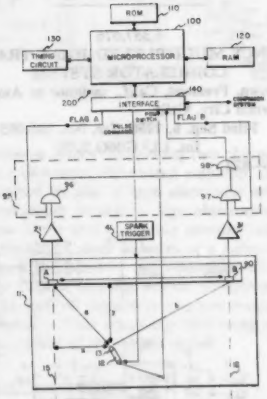
(f) the plurality of said storage cells in conjunction with the memory address space acting as the lamp data buffer.

4,357,672

DISTANCE RANGING APPARATUS AND METHOD

Joseph A. Howells, Brookfield Center, Conn., and Seymour J. Sindeband, Pound Ridge, N.Y., assignors to Science Accessories Corporation, Southport, Conn.

Filed Jul. 30, 1980, Ser. No. 173,723
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—561 **33 Claims**



1. Apparatus for determining the distance between an object and a reference position, comprising:

a microprocessor system including a central processor unit, a memory, and a timing circuit for producing timing pulses which determine the rate at which said microprocessor system performs individual instruction operations;

means controlled by said microprocessor system for generating propagating wave energy;

means for detecting the wave energy after it has passed between said object and said reference position;

said microprocessor system being adapted to generate and store a count that depends upon the number of instruction cycles it performs during a time interval that is a function of the travel time of said wave energy traveling between said object and said reference position;

said count being indicative of the distance between said object and said reference position.

4,357,673

APPARATUS FOR PERFORMING MEASUREMENTS AND ERROR ANALYSIS OF THE MEASUREMENTS

Barry G. Willis, Los Altos Hills; Arthur Schleifer, Palo Alto; Norton W. Bell, Palo Alto, all of Calif., Paul C. Dryden, West Chester, Pa.; Andrew Stefanski, Menlo Park, Calif., and C. Nelson Dorny, Broomall, Pa., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 18, 1980, Ser. No. 141,491
Int. Cl.³ G01J *3/42*; G06F *15/20*
U.S. Cl. 364—582 **6 Claims**

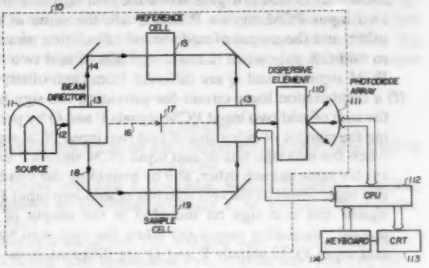
3. Apparatus for performing measurements and error analysis, and apparatus comprising:

measuring means for performing sample measurements, reference measurements and dark measurements to produce measurement data;

measuring control means coupled to said measuring means for controlling the measuring means to perform a plurality of sample, reference and dark measurements in accordance with a preselected measurement routine;

calculating means coupled to the measuring means for mathematically processing the measurement data to produce an average normalized dark-corrected value and an error value representing the statistical uncertainty of the average normalized dark-corrected value; and

supplementing means coupled to the measuring control means and to the calculating means for performing a



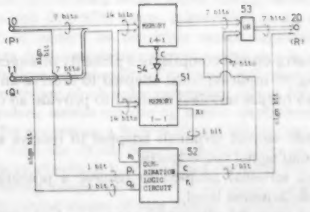
plurality of dark measurements prior to the execution of the measurement routine to produce a plurality of dark measurement data which are included along with the dark measurement data produced during the measurement routine in the calculation of the average normalized dark-corrected value and its associated error value, whereby the number of dark measurements used in the mathematical processing of the measurement data is increased above the number performed in the measurement routine to reduce the contribution to the error value attributable to the statistical uncertainty of the dark measurement data.

4,357,674

PCM SIGNAL CALCULATOR

Yoshikazu Ikeda, Tama, and Yasushi Wakahara, Yokohama, both of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1980, Ser. No. 189,539
Claims priority, application Japan, Sep. 22, 1979, 54-121580; Jan. 21, 1980, 55-4524; Jan. 28, 1980, 55-7743; May 21, 1980, 55-66406
Int. Cl.³ G06F *7/49*
U.S. Cl. 364—768 **8 Claims**



1. A PCM signal calculator for addition of two input PCM signals P and Q each having a sign bit and a plurality of absolute value bits encoded to non-linear encoding system selected from A-law encoding system and μ-law encoding system with segment number and step number within segment comprising:

(a) a pair of input terminals for receiving two input PCM signals P and Q, each including a predetermined sign bit;

(b) first calculation means coupled to said input terminals responsive to PCM signals for providing an output equivalent to the sum of the absolute values of said two input PCM signals;

(c) second calculation means coupled to said input terminals responsive to PCM signals for providing an output equivalent to the difference between the absolute values of said two input PCM signals;

(d) an OR-gate coupled to and receiving the outputs of said means (b) and (c);

(e) means for applying the output of said first calculation means (b) to said OR-gate when the said sign bits of said two input PCM signals P and Q are the same as each other, and the output of said second calculation means (c) to said OR-gate when the said sign bits of said two input PCM signals P and Q are different from each other;

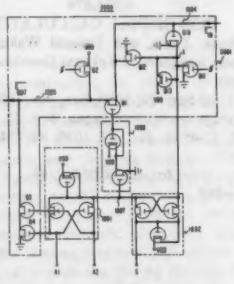
(f) a combination logic circuit for providing the sign bit of the sum of said two input PCM signals P and Q by providing the sign bit of either one of said two input PCM signals when the said sign bits of said input PCM signals P and Q are the same as each other, and by providing the combination logic result of the said sign bits of said two input PCM signals and said sign bit included in the output of said second calculation means (c) when the said sign bits of said input PCM signals P and Q are different from each other; and

(g) output terminal for providing the absolute value from the output of said OR-gate, and the sign bit from the output of said combination logic circuit.

4,357,675
RIPPLE-CARRY GENERATING CIRCUIT WITH CARRY REGENERATION

Ronald L. Freyman, Bethlehem, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 4, 1980, Ser. No. 175,056
Int. Cl.³ G06F *7/50*
U.S. Cl. 364—786 **3 Claims**



1. A carry circuit comprising a plurality of stages, each stage including an input terminal adapted to receive an input carry signal, an output terminal adapted to provide an output carry signal;

first and second terminals adapted to receive a first and a second signal respectively;

a third terminal adapted to receive a potential at a first predetermined level;

a clock terminal adapted to receive a clock signal;

load means coupled to the output terminal and responsive to the clock signal for controllably setting the output terminal to a second predetermined level;

transmission gate means having a conduction path coupled in series between the input and output terminals and a control electrode, the transmission gate means being responsive to a control signal applied to the control electrode for providing a relatively low resistance across the conduction path;

first logic means coupled to the output terminal and responsive to the first and second signals for providing a carry signal to the output terminal;

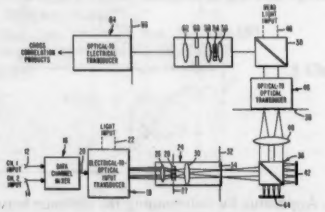
second logic means coupled to the control electrode of the transmission gate means and responsive to only the first signal or only the second signal for providing the control signal;

characterized in that there are included in at least one stage regeneration means comprising third logic means responsive to the input carry signal in the absence of the clock signal for providing an actuation signal and switching means coupled to the input terminal and responsive to the actuation signal for controllably coupling the input terminal to the third terminal.

4,357,676
FREQUENCY MULTIPLEXED JOINT TRANSFORM CORRELATOR SYSTEM

Hugh B. Brown, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sep. 8, 1980, Ser. No. 185,053
Int. Cl.³ G06G *9/00*
U.S. Cl. 364—822 **8 Claims**



1. A joint transform correlator system including means for providing the joint transform and means for providing the cross correlation products of a first and second channel of information, comprising the combination of:

channel mixer means for carrier modulating and filtering one channel of information and for adding the carrier modulated and filtered information to the other channel of information;

electrical-to-optical input transducer means for receiving the summed channels of information and for providing spatially separated channels of information; and

interferometer means disposed to interfere said spatially separated channels of information to produce the joint transform at a joint transform plane.

4,357,677
HADAMARD CONVERTERS EMPLOYING CHARGE TRANSFER DEVICES

Jean-Claude Rebourg, 95, Ave. de la Clairere, 78120 Rambouillet, France

Filed May 6, 1980, Ser. No. 147,137
Claims priority, application France, May 18, 1979, 79 12747
Int. Cl.³ G06G *7/12;* H03H *15/02*
U.S. Cl. 364—826 **17 Claims**

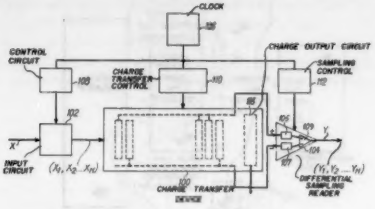
5. A device for carrying out a Hadamard conversion on periodic sampled signals, such conversion giving from a sequence of N input samples another sequence of N output samples connected to the input samples by a linear relationship which can be represented by a square matrix of dimension N having lines and columns of coefficients equal to $+1$ or -1, comprising:

a charge transfer device comprising a plurality of electrodes

disposed in lines, some electrodes being referred to as + sign electrodes and others as − sign electrodes;

an input circuit capable of forming from an input signal with a determined sampling period sequences of N input samples, for converting each sample into bundles of charges and for injecting these bundles at apporpriate moments under appropriate electrodes on the charge transfer device;

a circuit for controlling the transfer of charges from one electrode to the next and doing so at a first transfer frequency corresponding to a transfer period;



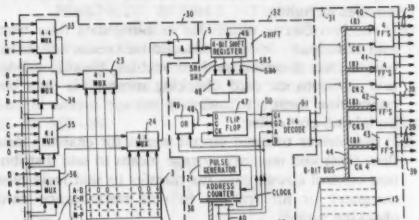
a differential charge reader comprising two charge measuring circuits and a two-input differential amplifier, one non-reversing connected to said + sign electrodes and the other reversing connected to said − sign electrodes, each connected to one of the said measuring circuits, and an output;

a circuit for forming output samples at a second frequency from the signal furnished by the differential charge reader, wherein: the charge transfer device comprises nine electrodes in line and of respective predetermined signs, the minimum duration of the transfer period being equal to half the sampling period of the output signal.

4,357,678
PROGRAMMABLE SEQUENTIAL LOGIC ARRAY MECHANISM

Gordon T. Davis, Pompano Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,824
Int. Cl.³ G06F *7/00*
U.S. Cl. 364—900 **11 Claims**



1. A programmable sequential logic array mechanism for performing logical operations and solving logical equations and comprising:

an input random access storage array having addressable plural-bit sotrage locations for storing input control words for testing for different input signals conditions;

input circuitry for receiving a plurality of binary input signals and for receiving input control words from the input storage array and producing binary truth signals indicating the states of agreement between the input signal conditions and the test conditions represented by the input control words;

a plurality of binary output bistable circuits for providing a plurality of binary output signals;

an output random access storage array having addressable plural-bit storage locations for storing output control words for controlling the states of the binary output bistable circuits;

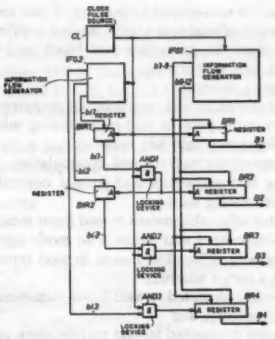
address generating circuitry for sequentially generating a series of different storage addresses and for supplying each such address to the address circuitry of both the input and the output storage arrays, for sequentially reading out the desired control words;

and control circuitry connecting the input circuitry with binary output bistable circuits and responsive to the truth signals produced by the input circuitry for enabling the binary output bistable circuits to respond to selected output control words.

4,357,679
ARRANGEMENT FOR BRANCHING AN INFORMATION FLOW

Oleg Avsan, and Nils K. Isaksson, both of Huddinge, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 892,494, Apr. 3, 1978, Pat. No. 4,222,101. This application Feb. 7, 1980, Ser. No. 119,492
Claims priority, application Sweden, Apr. 26, 1977, 7704786
The portion of the term of this patent subsequent to Sep. 9, 1997, has been disclaimed.
Int. Cl.³ G06F *7/28*
U.S. Cl. 364—900 **1 Claim**



1. In a pipeline computer system having a plurality of serially connected registering means each having input means, output means and storing means which in response to a clock pulses transmits information stored in the storing means to the output means and thereafter stores information in the storing means which is present at the input means, apparatus for branching data from registering means acting as a source of incoming data flow to a plurality of outgoing information flow branches comprising: clock pulse generating means for generating clock pulses; source registering means responsive to the clock pulses for generating a flow of digital informative words synchronous with the clock pulses and pluralities of digital branching bits synchronous with the clock pulses; a plurality of branch registering means each having an input means connected to the output means of said source registering means, clocking input means and output means connected to one of the output information flow branches for, in response to an activating, signal received at its clocking input means, transferring to the associated information flow branch digital information stored therein and then accepting for storage at least part of the digital information word then present at its input means; and a plurality of clock puise locking means, each of said clock pulse locking means including input means for receiving a

clock pulse and one of the digital branching bits and output means connected to the clocking input means of an associated branching register means for transmitting an activating signal whereto upon the occurrence of a clock pulse when the received branching bit has a particular value.

4,357,680

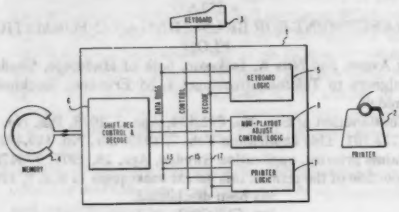
SELECTIVE FORMATTING OF BLOCKS OF TEXT CODES IN A MEMORY OF A WORD PROCESSING SYSTEM

John C. Greek, Jr., and Charles N. Sprott, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 883,444, Mar. 6, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,744

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—900 **11 Claims**



1. A system for non-output formatting of text sequences into text blocks, each of said text blocks having a different escapement length than the preceding text block and including at least one text line, comprising:

a recirculating memory;

a flag code stored in said recirculating memory for defining the addressable point in said recirculating memory immediately following said flag code;

input means connected to said recirculating memory for inputting text sequences and format control codes into said recirculating memory,

first operator selectable means in said input means for generating a non-output text adjust scan mode signal;

second operator selectable means in said input means for entering a range number;

display means connected to said input means and said recirculating memory; and

control means connected to said recirculating memory, said input means and said display means, and responsive to said non-output text adjust scan mode signal for activating a non-output text adjust mode including means for controlling said display means to display a prompt to the operator to enter a range number representing the number of text lines to be arranged into a text block, means for storing the range number entered, means for detecting the location of said flag code in said recirculating memory, means responsive to the detection of said flag code for decoding format control codes following said flag code in said recirculating memory and storing in a first register a line escapement length defined by said format control codes, and memory scan means, including means for decoding text sequences in said recirculating memory following said flag code and accumulating in a second register escapement values for the text sequences, compare means connected to said first and second registers for comparing the contents thereof, means for generating line ending codes operable to insert a line ending code into said recirculating memory in response to an equal compare from said compare means, means responsive to said means for generating line ending codes for accumulating a count of the number of line ending codes inserted into said recirculating memory, and means for comparing the count of line ending codes to the stored range number operative to deactivate said non-output text adjust mode when the compare is equal.

4,357,681

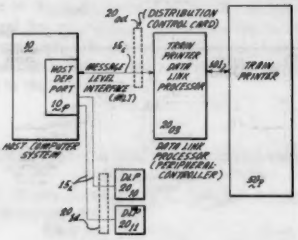
LINE TURN CIRCUIT FOR DATA LINK

David P. Chadra, Anaheim, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 7, 1980, Ser. No. 147,508

Int. Cl.³ G06F *3/12*

U.S. Cl. 364—900 **6 Claims**



1. In a network wherein a main host computer communicates to a train printer peripheral unit via an I/O subsystem having a plurality of peripheral-controllers housed in a base module, said base module having a backplane connection means for slide-in connection of cards holding a plurality of peripheral-controllers and a maintenance card checking means, and foreplane connection means, wherein each of said peripheral-controllers is made of a common-front-end circuit card and a peripheral dependent board card linked by said foreplane connection means, the combination comprising:

(a) a distribution control circuit card connected to said backplane connection means of said base module, said distribution control circuit card including:

(a1) bus connection means to said main host computer;

(a2) logic means, responsive to said main host computer or one of said peripheral controllers, to connect or disconnect said main host computer with a selected peripheral-controller;

(b) a train-printer peripheral-controller connected to said backplane connection means, said train printer peripheral-controller including:

(b1) receiver circuit means for enabling data flow from said main host computer, via said backplane and distribution control circuit card, or enabling data flow from said maintenance card checking means, via data bus connection means, to memory storage means in said peripheral-controller;

(b2) data-driver transmit circuit means for enabling data flow from said memory storage means to said distribution control circuit card for transfer to said main host computer or for transfer to said maintenance card checking means;

(b3) data bus line connection means between said distribution control circuit card and said memory storage means in said train-printer peripheral-controller;

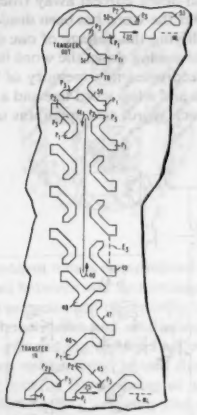
(b4) memory storage means for storing data to be transferred for operation and control of said train-printer peripheral unit, said memory storage means being connected to said data bus line connection means for receipt of data and for output of data;

(c) directional flow control means, initiated by said train-printer peripheral-controller, controlling said receiver circuit means and data-driver transmit circuit means for selecting data transfer flows either from said memory storage means in said train-printer peripheral-controller to said distribution control circuit card, or from said distribution control circuit card to said memory storage means in said train-printer peripheral-controller.

4,357,682
CONDUCTORLESS TRANSFER FOR MAGNETIC BUBBLE MEMORIES

Herbert M. Shapiro, Bridgewater, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1980, Ser. No. 209,900
Int. Cl.³ G11C 19/08
U.S. Cl. 365—16 7 Claims

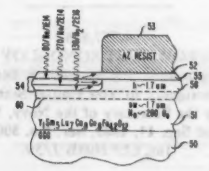


1. A magnetic bubble memory including a layer of magnetic material in which magnetic bubbles having a minimum diameter d can be moved, and propagations means for moving bubbles in said layer synchronously along at least first and second paths responsive to a magnetic field reorienting in a first direction in the plane of said layer, said propagation means including a pattern of magnetic elements spaced apart distances large compared with d and defining at least a first transfer position for moving bubbles between said first and second paths in response to reorientation of said field in a second direction.

4,357,683
MAGNETIC BUBBLE MEMORY WITH ION-IMPLANTED LAYER

Terence J. Nelson, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 29, 1979, Ser. No. 89,090
Int. Cl.³ G11C 19/08
U.S. Cl. 365—36 8 Claims

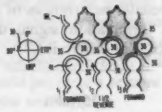


1. A magnetic bubble memory including
a magnetic host layer in which bubbles can be moved and a means for moving bubbles in said host layer,
said memory being characterized by first and second ion-implanted layers in first and second planes respectively said first layer being uniform and for the purpose of suppressing hard bubbles and said second layer being patterned.

4,357,684
REVERSE-ROTATION TRANSFER GATES

Dirk J. Muehlner, Berkeley Heights; Terence J. Nelson, and Raymond Wolfe, both of New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 3, 1980, Ser. No. 203,354
Int. Cl.³ G11C 19/08
U.S. Cl. 365—36 10 Claims

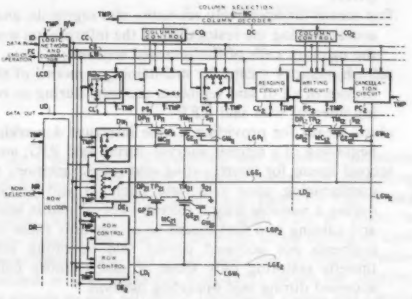


1. A magnetic bubble memory comprising a layer in which bubbles can be moved, said layer having a threefold axis of symmetry defining a preferred magnetization direction in the plane of said layer, means for providing a magnetic field reorienting cyclically in the plane of bubble movement, means for changing the direction of said in-plane field selectively, a pattern of ion-implanted regions in said layer defining at least first and second paths along which bubbles can be moved in response to said in-plane field, said pattern also defining means for transferring a bubble from said first to said second path in response to a temporary change in the direction of said in-plane field.

4,357,685
METHOD OF PROGRAMMING AN ELECTRICALLY ALTERABLE NONVOLATILE MEMORY

Vincenzo Daniele, Milan; Giuseppe Corda, Saronno; Aldo Magrucci, and Guido Torelli, both of Milan, all of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Agrate Brianza, Italy

Filed Jul. 14, 1980, Ser. No. 168,562
Claims priority, application Italy, Sep. 28, 1979, 26071 A/79
Int. Cl.³ G11C 7/00
U.S. Cl. 365—189 5 Claims



1. A method of programming a nonvolatile electronic memory with a multiplicity of cells each producing, in response to a reading signal applied thereto, an output voltage depending upon the magnitude of a charge which is individually variable, by the application of charge-modifying potentials thereto, between a first absolute value not greater than a predetermined lower level and a second absolute value not less than a predetermined upper level,
comprising the steps of:
(a) applying to a selected cell, in the presence of a binary control voltage, a reading signal to determine whether a

significant difference exists between said control voltage and said output voltage;

(b) applying to the selected cell, upon detecting such a significant difference, a charge-modifying potential for a time sufficient to bring said output voltage closer to said control voltage;

(c) repeating step (a), followed by step (b) if said difference persists, and continuing in like manner until said difference substantially disappears, the time of application of said charge-modifying potential being progressively lengthened with successive recurrences of step (b); and

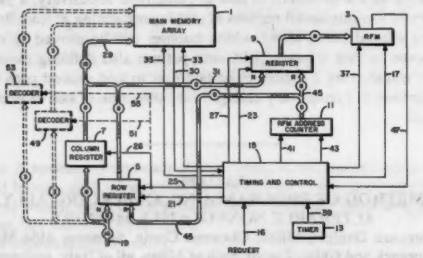
(d) generating a termination signal upon the substantial disappearance of said difference.

4,357,686

HIDDEN MEMORY REFRESH

James H. Scheuneman, St. Paul, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,156
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—222 **2 Claims**



1. A memory system comprising:

an array of memory cells, said array divided into a plurality of addressable segments with each segment containing a plurality of said memory cells and each of said memory cells requiring the restoration of the information stored therein during periodic refresh requirement intervals (RRI);

first means for selectively accessing said segments, and each access causing the restoration of the information stored in the memory cells of the accessed segment;

refresh memory means for maintaining a record of the addresses of all of said segments accessed during an operating interval with said RRI;

clock means for providing a time interrupt demarking the beginning of a refresh interval during said RRI; and

second means for interrogating said refresh memory means commencing upon said time interrupt and proceeding during a variable length refresh interval within said RRI and causing said first means to access only those of said segments not accessed during said operating interval, thereby restoring only those of said memory cells not accessed during said operating interval.

4,357,687

ADAPTIVE WORD LINE PULL DOWN

Roger V. Rufford, Redwood City, Calif., assignor to Fairchild Camera and Instr. Corp., Mountain View, Calif.

Filed Dec. 11, 1980, Ser. No. 215,298
Int. Cl.³ G11C *7/00, 8/00*
U.S. Cl. 365—230 **9 Claims**

1. A method for pulling down the word line voltage when a word is to be deaddressed in a memory of the kind having a plurality of words, with each word associated with a top word line and a bottom word line, said method comprising,

detecting a signal that the address of a word is to be changed,

amplifying the detected signal,

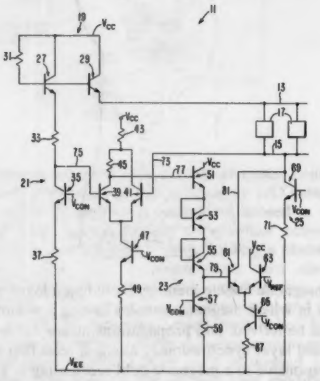
steering a pull-down current to the bottom word line to commence pulling the word down in response to the amplified signal,

maintaining that pull-down current on the bottom word line until the word is deaddressed,

detecting the fact that the word has been pulled down, and

steering the pull-down current away from the bottom pull-down line after the word has been deaddressed by detecting and amplifying the voltage of one of the word lines.

5. Apparatus for pulling down the word line voltage when a word is to be deaddressed in a memory of the kind having a plurality of words and a top word line and a bottom word line associated with each word, said apparatus comprising,



detecting means for detecting a signal that the address of a word is to be changed,

amplifying means operatively associated with the detecting means for amplifying the detected signal,

steering means operatively associated with the amplifying means for steering a pull-down current to the bottom word line to commence pulling the word down in response to the amplified signal and for maintaining that pull-down current on the bottom word line until the word is deaddressed,

said amplifying means including current switch means operatively associated with a word line for detecting the fact that the word has been pulled down and effective to cause the level shifter and steering means to steer the pull-down current away from the bottom pull-down line after the word has been deaddressed.

4,357,688

LOW COST SONOBUOY

John R. Dale, Pennsburg, and Malcolm I. Dickinson, Chalfont, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 11, 1981, Ser. No. 300,875
Int. Cl.³ H04B *1/59*
U.S. Cl. 367—4 **6 Claims**

1. A low cost air launched sonobuoy, comprising, in combination:

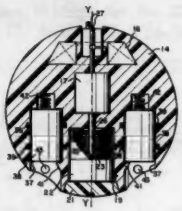
spherical float means of a semi-rigid expanded foam having a first recess means extending inwardly along an axis passing through the center of said float means, and a second recess means symmetrically positioned about said first recess means extending inwardly for receiving and retaining a plurality of batteries;

hydrophone means deployably positioned within said first recess means;

plug means slidably positioned in the opening of said first recess means against said hydrophone means;

vertical antenna means fixed at the base thereof to said float means on said axis opposite from said first recess means and externally wound around said float means and said plug means in a plane co-linear with said axis;

antenna release means mounted on the surface of said float means in said plane releasably maintaining said antenna means around said float means;



electrical component means encapsulated in said float means along said axis between said first recess means and the base of said antenna means and operatively connected between said hydrophone means and said antenna means for processing and transmitting detected acoustic signals; and

electrode means encapsulated in said float means having a terminal exposed at the opening of said second recess means for electrically energizing said release means and said component means when the batteries are inserted and said float means is immersed in water.

4,357,689

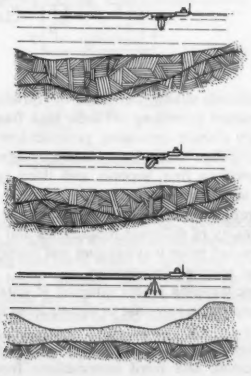
SEISMIC DATA GATHERING METHOD

William H. Ruehle, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 16,681, Mar. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 793,680, May 4, 1977, Pat. No. 4,146,870, which is a continuation-in-part of Ser. No. 709,486, Jul. 28, 1976, abandoned. This application Feb. 23, 1981, Ser. No. 237,195

Int. Cl.³ G01V *1/38, 1/02*

U.S. Cl. 367—23 **7 Claims**



1. In seismic exploration, a method of obtaining optimum seismograms when traversing a seismic line regardless of the dip of the subsurface formations with respect to the direction of said line comprising:

traversing said line with a linear array of seismic sources and a linear array of seismic detectors spaced along said line from said sources;

activating said linear array of seismic sources simultaneously to produce a seismic wave that travels substantially vertically into the earth;

recording signals representative of the vertical traveling seismic energy reflected from said subsurface formations and detected by said detectors to produce optimum traces of reflections from formations which dip upwardly from said detectors toward said sources;

activating said linear array of seismic sources sequentially beginning at the source most distant from the detector array and progressing toward the detector array with preselected delays between each firing to effect a tilted seismic source and produce a seismic wave that travels at an angle with the vertical;

recording signals representative of the aforesaid seismic energy traveling at an angle, reflected from said subsurface formations, and detected by said detectors to produce optimum traces of reflections from formations which dip downward from said detectors toward said sources;

repeating said activating steps at spaced points along said seismic line; and

combining said traces to produce optimum seismograms representing both of the aforesaid types of formations.

4,357,690

SWITCH CIRCUIT FOR EXCITING ULTRASONIC TRANSDUCER ELEMENTS

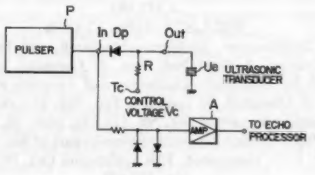
Masao Kuroda, Tokyo; Sekijyuro Ono, Ooita; Toshio Kondo, Kunitachi, and Noriyoshi Ichikawa, Nara, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 217,022

Claims priority, application Japan, Dec. 24, 1979, 54-166875

Int. Cl.³ G01S *7/52*

U.S. Cl. 367—8.7 **9 Claims**

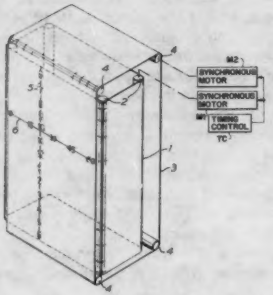


4. An apparatus for transmitting and receiving ultrasonic waves comprising at least one pulser means for generating pulses, at least one ultrasonic transducer means for transmitting ultrasonic waves and receiving an echo from an object to produce echo signals, and switch circuit means having an input terminal connected to said pulser means and an output terminal connected to said ultrasonic transducer means for applying pulse signals to said ultrasonic transducer means and passing the received echo signals to an echo processor means connected to a connecting point at which said pulser means is connected to said input terminal of said switch circuit means, said switch circuit means comprising a diode having a cathode connected to said input terminal and an anode connected to said output terminal, said anode also being connected through a resistor to a control voltage terminal means for controlling a conductive state of said diode, said diode having a long reverse recovery time due to a hole storage effect and being adapted to produce pulse signals having bipolar pulse components at said output terminal in accordance with pulses of said pulser means.

4,357,691
RECTANGULAR-FACED CLOCK

James Goodchild, 109B Hill St., Garnethill, Glasgow, G3 6TY, Scotland

Filed Aug. 26, 1980, Ser. No. 181,349
Claims priority, application United Kingdom, Sep. 1, 1979, 7930370
Int. Cl.³ G04B 19/20
U.S. Cl. 368—62 4 Claims



1. A rectangular-faced clock wherein the passage of time is indicated by the intersection of a horizontal line moving vertically across the front of the clock and vertical line moving horizontally across the front of the clock, comprising a rectangular clock face, first and second time line means for producing at said clock face a horizontal line image and a vertical line image respectively spanning the clock face with the lines intersecting each other, and means for activating said first and second time line means to move said horizontal line vertically and said vertical line horizontally whereby the movement of one line relative to the other line represents the passage of hours and the movement of the other line relative to the one line represents the passage of minutes.

4,357,692
BELL-STRIKING CLOCK

Rudolf Broghammer, Eschbronn-Mariazell, and Franz Käser, St. Georgen, both of Fed. Rep. of Germany, assignors to Fabrik fur Technische Laufwerke und Apparate Kundo Kieninger & Obergfell, St. Georgen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 128,518, Mar. 10, 1980, Pat. No. 4,276,625, which is a continuation-in-part of Ser. No. 29,758, Apr. 12, 1979, abandoned. This application Oct. 16, 1980, Ser. No. 197,501
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941942
Int. Cl.³ G04C 21/06
U.S. Cl. 368—75 8 Claims

1. An electronic clock emitting time signals corresponding to the strokes of ships' bells, comprising:

a clockwork provided with driving means;

normally open switch means briefly closed by said clockwork every thirty minutes;

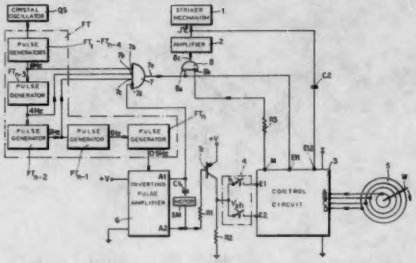
first pulse-generating means for producing a square wave with interleaved first and second half-cycles of different voltage levels;

second pulse-generating means synchronized with said first pulse-generating means for producing a pulse train with a cadence equaling four times that of said square wave;

a coincidence circuit with inputs connected to respective outputs of said first and second pulse-generating means for producing pairs of output pulses only during said first half cycles of said square wave;

a striker mechanism connected via a normally blocked gate to said coincidence circuit for sounding a stroke in response to each output pulse passed by said gate in an unblocked state thereof;

a control circuit connected to said first pulse-generating means via circuitry including said switch means for receiving several cycles of said square wave during each time of closure of said switch means, said control circuit being triggerable by said second half-cycle into emitting an enabling signal unblocking said gate; and

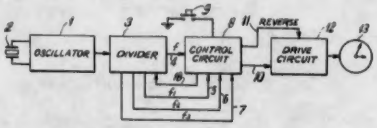


timing means coupled with said clockwork and connected to said control circuit for establishing progressively longer durations for said enabling signal, spanning from one output pulse to eight output pulses, during times of closure of said switch means at the ends of successive half-hour intervals of a four-hour operating period.

4,357,693
ELECTRONIC HOUR TIMESETTING DEVICE FOR ELECTRONIC ANALOG TIMEPIECE

Michel Plancon, Besancon; Jean-Pierre Migeon, Audeux, and Paul Grand Chavin, Besancon, all of France, assignors to Timex Corporation, Waterbury, Conn.

Filed Jun. 20, 1980, Ser. No. 161,464
Int. Cl.³ G04B 27/00
U.S. Cl. 368—187 12 Claims



1. An electronic analog timepiece comprising:

a time standard providing periodic high frequency signals,

a frequency divider providing periodic low frequency signals in response to said high frequency signals, said divider also providing first, second, and third intermediate frequency signals,

a drive circuit responsive to stepping motor pulses supplied at a plurality of different frequencies and adapted to provide forward pulse wave shapes and reversing pulse wave shapes at selected frequencies,

a reversible stepping motor adapted to rotate the hands of said timepiece in response to signals from the drive circuit, and

control circuit responsive to said low frequency and to said first, second, and third intermediate frequency signals, said control circuit having first gating means furnishing normal, slow, fast, and accelerated stepping pulses to the drive circuit for movement of said timepiece in at least one direction, said control circuit further including a plurality of counters having a plurality of second gating means connected to selected counter outputs, and a plurality of

flip-flop means arranged to control transition from one stepping speed to the next in response to preselected numbers of counts registered by said counters, and

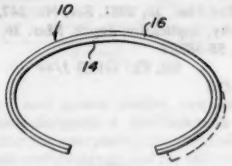
a manual time correcting switch connected to said control circuit for controlling said logic switching means.

4,357,694

THERMALLY RESPONSIVE BIMETALLIC JEWELRY

Carl F. Montuori, 7107 Ridgewood Ave., Chevy Chase, Md. 20015

Filed Jun. 18, 1981, Ser. No. 274,802
Int. Cl.³ A44C 5/02, 5/12, 9/00
U.S. Cl. 368—282 10 Claims



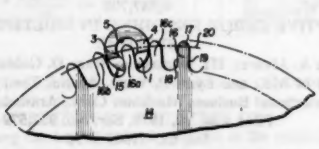
1. An article of jewelry to be worn upon the human body in substantial encircling relation to a portion thereof comprising a curved length of decorative metallic material configured to embrace a said human body portion, said curved jewelry length having incorporated therein along the length thereof an arcuately curved bimetallic strip, said strip extending in a lengthwise orientation with respect to said jewelry length, said strip including means comprising radially inner and outer metal layers, the metals of said layers having different respective coefficients of expansion thereby to effect relative lengthening or shortening of said jewelry length as said bimetallic strip varies its curvature in response to temperature changes.

4,357,695

REDUCTION GEAR FOR ELECTRONIC TIMEPIECE

Peter Bachmann, Bettlach, Switzerland, assignor to Ebauches Bettlach, S.A., Soleure, Switzerland

Filed Jul. 17, 1980, Ser. No. 169,798
Claims priority, application Switzerland, Aug. 10, 1979, 7385/79
Int. Cl.³ G04B 29/00; F16H 55/17
U.S. Cl. 368—322 6 Claims



1. A reduction gear for an electronic timepiece, comprising

a driving pinion adapted for step-by-step rotation and having a body with two teeth made in one piece with said body, said teeth being situated diametrically opposite one another and each having two plane flanks disposed parallel to the axis of rotation of said pinion, and

a driven wheel having a plurality of teeth, each of said teeth having an ogival tip and two radially oriented plane flanks,

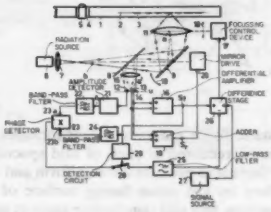
said driving pinion meshing with said driven wheel, the distance between the axis of rotation of said driving pinion and the axis of rotation of said driven wheel being less than the length of the radius of the tip-circle of said driven wheel, whereby said teeth of said driven wheel block said driving pinion when a disturbing torque is transmitted from said driven wheel to said driving pinion during an interval in said step-by-step rotation thereof.

4,357,696

OPTICAL SCANNING APPARATUS WITH FOCUSSING SYSTEM

Martinus P. M. Bierhoff, and Kornelis A. Immink, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,459
Claims priority, application Netherlands, Jun. 18, 1979, 7904724
Int. Cl.³ G11B 7/12
U.S. Cl. 369—45 9 Claims



1. An apparatus for optically scanning a record carrier on which information is recorded, which apparatus is provided with a radiation source for emitting a scanning beam, a read detector for detecting the information contained in the scanning beam after cooperation with the record carrier and a focussing system for focussing the scanning beam on the record carrier, which focussing system comprises a focussing detector for supplying a focussing measuring signal which is representative of the extent to which the scanning beam is out of focus on the record carrier and a focussing control device for controlling the focussing of said scanning beam depending on the measuring signal, characterized in that the apparatus is furthermore provided with an amplitude detector, which is coupled to the read detector, for supplying an output signal which represents the amplitude of the information signal read, a phase detector having a first input for receiving a focussing error signal, a second input for receiving the output signal of the amplitude detector, and an output for supplying a correction signal having a polarity which depends on the phase relationship between the signals applied to the two inputs, and a difference stage for subtracting the measuring signal supplied by the focussing detector and the correction signal supplied by the phase detector from each other and applying the difference signal to the focussing control device.

4,357,697

DISK COMPLEX FOR REDUCING ELECTROSTATIC FORCES ON A RECORD DISK

Soo W. Yi, 97, Changyung-Dong, Dong-Gu, Incheon-Si, Kyungi-Do, Rep. of Korea

Filed Apr. 1, 1980, Ser. No. 136,372
Int. Cl.³ G11B 3/58
U.S. Cl. 369—72 10 Claims

1. A disk complex for reducing the electrostatic forces on a record disk used for storing audio information, comprising:

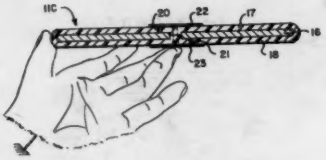
a conductive support member;

two opposed spaced vinyl plastic surface members each carried by said support member for the recording, storing and releasing of audio information contained in electrical signals, said vinyl plastic members being in the form of a disk which substantially conforms to the surface of said support member, each said disk being provided with at least one circumferentially spaced aperture inwardly of the outer periphery thereof extending from the outer

facing surfaces thereof inwardly to the top surface of said support member;

electrostatic force reducing means coupled with said surface members and said support member, said support member and said surface members together forming a sandwich construction;

a pair of conductive labels positioned on the outer facing surfaces of said plastic members and overlying said force reducing means to thereby couple said labels to said support member coupled with said support member; and,



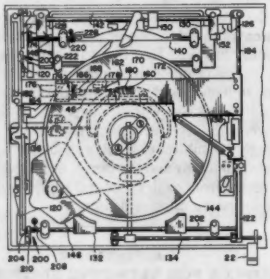
said electrostatic force reducing means includes a conductive substance received in each of said spaced apertures for filling thereof to provide for a uniform and continuous outer surface on the outer facing surface of said vinyl plastic members, and said conductive support member and conductive labels together have a capacitative effect for reducing electrostatic forces on the outwardly facing surfaces of the surface members.

4,357,698

VIDEO DISC PLAYER HAVING CADDY-ACTUATED RECORD RECEIVING PADS

Leslie A. Torrington, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,666
Int. Cl.³ G11B *17/04*
U.S. Cl. 369—77 **4 Claims**



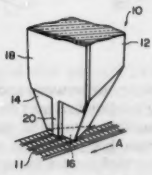
1. In a record player for recovering prerecorded information from a disc record subject to removable occupancy of a protective caddy; said player being provided with a record extracting mechanism for removing the enclosed record from said caddy from retention in said player during a caddy withdrawal subsequent to a full insertion of an occupied caddy into said player; said player having a pair of side rails for guiding the caddy along a path; an empty caddy being inserted into said player along said side rails to retrieve a record retained in said player; said player being equipped with a plurality of depressible receiving pads for supporting a retained record; the location of said receiving pads occupying a raised position thereof being such that a retained record resting on said receiving pads is aligned with said side rails in order to facilitate the return of the retained record into said caddy when it is inserted into said player for record retrieval; the improvement comprising means located adjacent to one of said side rails and subject to engagement with a portion of a leading surface of said caddy during an insertion thereof into said player for depressing at least one of said plurality of pads to a lowered position out of said caddy path.

4,357,699

CAPACITANCE DETECTION TYPE STYLUS WITH DIAMOND BODY AND ELECTRODE HAVING THE SAME WEAR RESISTANCE PROPERTIES

Hideaki Takehara; Yoshiyo Wada, both of Yokohama; Kunio Goto, Tokyo; Kyusaku Suga, Tokyo, and Hitoshi Watanabe, Tokyo, all of Japan, assignors to Adamant Kogyo Co., Ltd., Tokyo and Victor Company of Japan, Limited, Yokohama, both of, Japan

Filed Mar. 25, 1981, Ser. No. 247,489
Claims priority, application Japan, Mar. 26, 1980, 55-38396; Mar. 26, 1980, 55-38397
Int. Cl.³ G11B *3/44*
U.S. Cl. 369—173 **7 Claims**



1. A stylus for detecting signals recorded as geometric variations in a recording medium, comprising a body of diamond having a contact surface which rests on a plurality of tracks of said recording medium when in use and an electrode attached to a surface of said diamond body at an angle to said contact surface, said electrode extending toward said recording medium to share a common plane with said contact surface, said contact surface of said diamond body having a predetermined crystallographic plane whose wear resistance property is substantially equal to the wear resistance property of the portion of said electrode adjacent to said common surface plane, whereby said portion of said electrode and said contact surface of said diamond body have a tendency to wear at substantially the same rate.

4,357,700

ADAPTIVE ERROR ENCODING IN MULTIPLE ACCESS SYSTEMS

Joseph A. Alvarez, III, Damascus; Bruce D. Gobioff, Wheaton, both of Md., and Lynn P. West, Austin, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 10, 1978, Ser. No. 932,579
Int. Cl.³ H04J *3/16*
U.S. Cl. 370—83 **23 Claims**

1. In a multiplex communication system:

a first station;

means at said first station for periodically transmitted signals representing information in multiple separate channels;

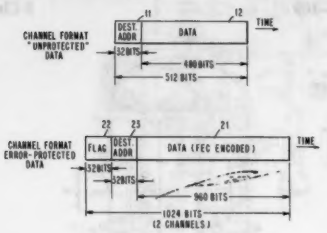
a plurality of second stations individually adaptable to receive the information signals in various selected ones of said channels;

means at said first station for adaptively varying the form of the transmitted signals representing the information in any one of said channels, from a first predetermined form to a second predetermined form and from said second form to said first form, said means being capable of varying the signal form in said any one channel without affecting the form of signals in other channels;

means at said first station for transmitting control signals in association with each of said information channels, said

control signals effectively designating the form and destination of the information representing signals in the associated channels in each period of transmission;

means at each said second station for receiving said control signals; and

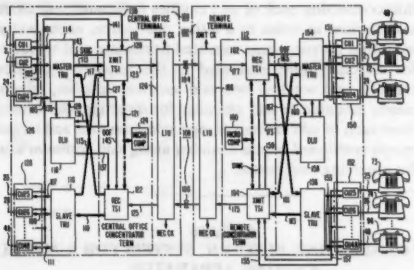


means at each said second station, responsive to control signals which designate a destination in the respective second station for interpreting the form effectively designated by said control signals and for utilizing said interpretation for controlling the reception and selective utilization of information in the associated channels.

4,357,701
DIGITAL CONCENTRATOR TERMINAL SYNCHRONIZATION

Ronald J. Canniff, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 12, 1980, Ser. No. 186,657
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—100 **9 Claims**



1. A method of synchronizing a plurality of concentrated digital pulse streams

CHARACTERIZED BY THE STEPS OF

detecting the loss of synchronization at the receiving and expanding terminal (122,162) for said concentrated digital pulse streams,

inhibiting the expansion of said concentrated digital pulse streams during synchronization, and

resuming the expansion of said concentrated digital pulse streams after synchronization has been achieved.

4,357,702
ERROR CORRECTING APPARATUS

David Chase, Needham, and Richard Spencer, Wellesley, both of Mass., assignors to C.N.R., Inc., Needham Heights, Mass.

Filed Nov. 28, 1980, Ser. No. 211,173
Int. Cl.³ G06F *11/00*; G11B *5/44*
U.S. Cl. 371—1 **29 Claims**

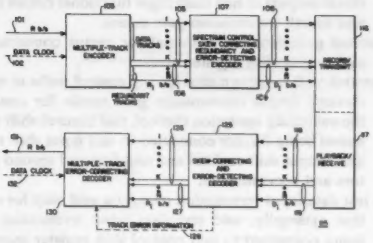
1. Skew correction apparatus for use in a digital information processing system wherein a stream of digital data is broken into a plurality of sequenced parallel streams to be processed simultaneously by said data processing system, said correction apparatus comprising,

means for dividing said digital data in each of said parallel streams into blocks of predetermined length;

means responsive to the data signals in each of said blocks for computing a coded parity word;

means for associating said parity words with the corresponding data block to form a codeword;

means for assembling said codewords into an encoded data stream to be processed;



means responsive to data in each of said encoded data streams and operative subsequent to said processing of said data for detecting a codeword in each of said encoded data streams;

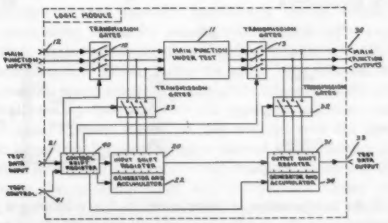
means responsive to the detection of a codeword for temporarily storing portions of the associated data stream; and

means responsive to the detection of a codeword on every one of said encoded data streams for simultaneously reading data out of said storage means.

4,357,703
TEST SYSTEM FOR LSI CIRCUITS RESIDENT ON LSI CHIPS

Nicholas P. Van Brunt, White Bear Lake, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Oct. 9, 1980, Ser. No. 195,697
Int. Cl.³ G01R *31/28*; G06F *11/00*
U.S. Cl. 371—15 **4 Claims**



1. An LSI chip logic testing system adapted to be resident on an LSI chip comprising:

an LSI chip having chip functional inputs and chip functional outputs,

a main logic functional circuit on said chip, said circuit having main logic functional inputs and main logic functional outputs,

first transmission gate means on said chip switchably connecting the chip functional inputs to the main logic functional inputs,

second transmission gate means switchably connecting the main logic functional outputs to the chip functional outputs,

input shift register means for serially receiving and sending test data and for parallel connection with the main logic functional inputs of said main logic functional circuit,

first generator and accumulator means connected with said input shift register means,

third transmission gate means switchably connected between said main logic functional inputs and said input shift register means,

fourth transmission gate means switchably connected to the main logic functional outputs,

output shift register means connected to said fourth transmission gate means for serially receiving and sending test data and for parallel connection with the main logic functional outputs of said main logic functional circuit through said fourth transmission gate means,

second generator and accumulator means connected with said output shift register means,

control shift register means having control paths to said first through fourth transmission gate means for controlling the switching operation thereof, said control shift register means being further connected to said input shift register, said output shift register and said first and second generators and accumulators,

a test data input termination means on said chip for connection externally, said test data input termination means being connected to said control shift register means,

a test control input means connected externally to said chip and connected to said control shift register means, and

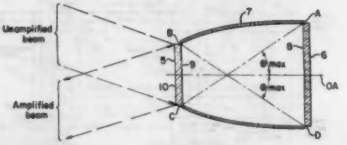
a test data output termination means connected externally to said chip and connected to said control shift register means.

4,357,704

DISC OR SLAB LASER APPARATUS EMPLOYING COMPOUND PARABOLIC CONCENTRATOR

Walter Koechner, Great Falls, Va., assignor to Science Applications, Inc., La Jolla, Calif.

Filed Sep. 15, 1980, Ser. No. 187,326
Int. Cl.³ H01S *3/093*
U.S. Cl. 372—72 **19 Claims**



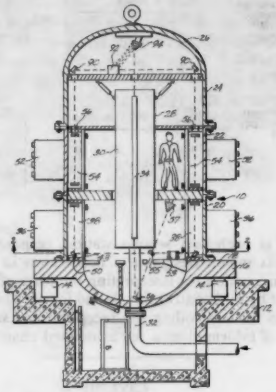
1. In combination, a laser medium body having a pair of similar generally parallel opposite planar major faces and having a thickness dimension between said faces which is small as compared to a transverse dimension of said faces, said body also having a pumping surface portion; a laser pump panel having a surface portion from which it is adapted to emit a relatively large cross section beam of generally collimated laser pumping radiation; and flux concentrating coupling means for said pump and laser medium body, said means comprising a compound parabolic concentrator having an inlet end opening across which said surface portion of the pump panel extends for direction of pumping radiation thereinto, and having an outlet end opening of reduced area across which the pumping surface portion of said laser medium body extends for receipt of concentrated radiation from said pump panel.

4,357,705

MULTI-SOURCE LASER BEAM MODULE

Donald R. Hodson, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 7, 1980, Ser. No. 166,009
Int. Cl.³ H01S *3/23*
U.S. Cl. 372—109 **5 Claims**



1. Apparatus for focusing high energy beams on a target from multiple laser sources, comprising:

a housing forming a vacuum chamber, a group of lasers positioned in a ring around the periphery of the housing, each laser including a resonant laser cavity defining a window therein and extending from said periphery into said chamber, fluid conduit means extending between and interconnecting each of said cavities for connecting all of said cavities in series to a lasing gas source, each cavity including mirror means mounted proximate said window for directing light generated in the respective cavities through said window into said vacuum chamber, mirror means mounted in said chamber for directing said beams from each of said cavities along a common axis, and target means positioned in said chamber along said common axis for receiving said beams.

4,357,706

ARC GENERATING ELECTRIC SYSTEM FOR A METAL CASTING APPARATUS

Yoshimasa Kidowaki, Hommachi, Japan, assignor to Iwatani Sangyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 21, 1980, Ser. No. 170,930
Int. Cl.³ H05B *7/148*
U.S. Cl. 373—104 **1 Claim**

1. An arc generating electrical system adapted for use in an inert gas atmosphere metal casting apparatus, which system comprises:

a first high-tension d.c. supply having an output circuit in which arc generating electrodes and a high voltage rectifier are connected in series;

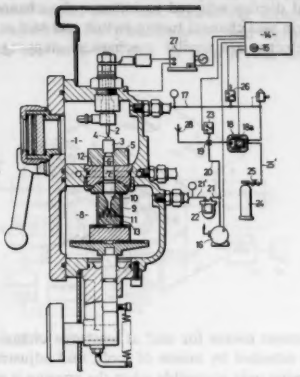
said high-voltage rectifier being at the forward position with respect to said first d.c. supply;

a second high-tension d.c. supply connected in parallel to said high-voltage rectifier;

said second d.c. supply being at the forward position with respect to said first d.c. supply; and,

said high-voltage rectifier having a short circuit in parallel therewith, wherein said short circuit has a switch closable so as to complete said short circuit while said first d.c. supply applies voltage to its output circuit in an unpulsed

and continuous manner and, a relay is connected in series to said high voltage rectifier so as to close said switch

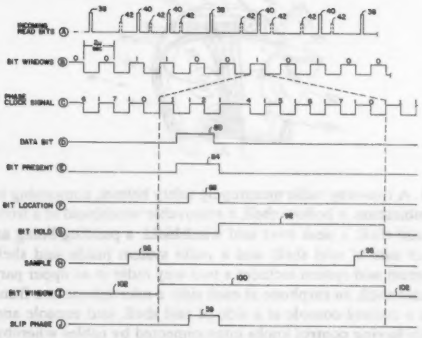


when said relay is energized and to simultaneously shut off said second d.c. supply.

4,357,707
DIGITAL PHASE LOCK LOOP FOR FLEXIBLE DISK DATA RECOVERY SYSTEM

Dale E. Delury, Irvine, Calif., assignor to Pertec Computer Corporation, El Segundo, Calif.

Filed Apr. 11, 1979, Ser. No. 29,065
Int. Cl.³ H03L *7/00*
U.S. Cl. 375—119 **23 Claims**



13. A method of generating a signal in phase lock with bits within an encoded bit stream having data bits and clock bits, comprising the steps of:

providing a phase clock signal formed of a sequence of phase clock cycles;

producing a bit window to correspond with each bit in said bit stream;

each of said bit windows having a variable duration defined by a plurality of said phase clock cycles;

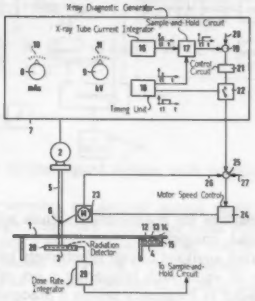
determining the position of a bit in said bit stream with respect to the phase clock cycles within the bit window corresponding therewith; and

selectively varying the number of phase clock cycles defining a bit window responsive to the position within said bit window of the bit corresponding therewith.

4,357,708
X-RAY DIAGNOSTIC SYSTEM COMPRISING TOMOGRAPHIC APPARATUS

Klaus Baeker, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,075
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947354
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—25 **4 Claims**

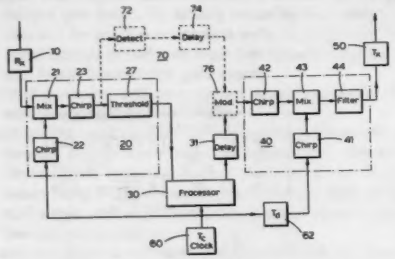


1. An x-ray diagnostic system comprising tomographic apparatus having path selection means for the selection of the path of movement, a photographic exposure unit comprised of an x-ray tube and an image layer carrier, an x-ray diagnostic generator for supplying a high voltage for energizing said x-ray tube and having means (8, 9) for the selection of exposure parameters for the photographic exposure unit to provide for an x-ray exposure during a photographic exposure time which is a function of said exposure parameters, characterized in speed controlling means for causing said photographic exposure unit to begin traversing the path of movement selected by said path selection means during an initial time interval at a given running speed selected to complete traverse of the path in a total running time equal to the expected exposure time, control signal forming means (16, 29) coupled with the tomographic apparatus for generating a control signal during said initial time interval as a function of the exposure parameter that determines the exposure time, and comparator means (25) having one input coupled with said control signal forming means for receiving a control signal generated during said initial time interval and a second input for receiving a motor signal indicating the actual speed of the exposure unit said comparator means (25) having an output for connection with said speed controlling means and being operable to compare the control signal with the motor signal and to control said speed controlling means in accordance with any deviation of said control signal relative to said motor signal to adjust the running speed of the photographic exposure unit along the selected path after the initial time interval such that the actual total running time of the photographic exposure unit along the selected path will substantially equal the photographic exposure time based on measurement of said photographic exposure parameter.

4,357,709
APPARATUS FOR REGENERATING SIGNALS WITHIN A FREQUENCY BAND

Michael B. N. Butler; Walter W. Jacobs, and Peter M. Grant, all of Edinburgh, Scotland, assignors to Racal-Mesl Limited, Scotland

Filed Nov. 5, 1980, Ser. No. 204,672
Claims priority, application United Kingdom, Nov. 12, 1979, 7939108
Int. Cl.³ H04K *3/00*; H04B *7/14*
U.S. Cl. 455—20 **21 Claims**



13. Apparatus for regenerating signals within an input frequency band, comprising:

a spectrum analyzer circuit repetitively triggerable to transform on each such triggering a set of signals mutually displaced in frequency within a predetermined frequency band to a corresponding series of signals mutually displaced in time according to a predetermined frequency-to-time relationship;

a synthesizer circuit for transforming a received series of time displaced signals from said analyzer circuit into a set of frequency signals in accord with a predetermined time-to-frequency relationship that so matches the frequency-to-time relationship of said analyzer circuit that the same frequency differences exist between a set of signals from the synthesizer circuit as existed between the set of signals that gave rise thereto in the input frequency band of the analyzer circuit;

timing means coupled to said analyzer circuit and said signal regenerator circuit to supply thereto signals for triggering said analyzer circuit and providing a time reference for said signal regenerator circuit; and

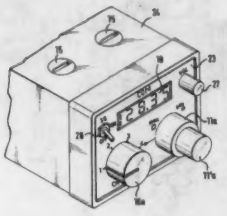
signal processor means coupling said synthesizer circuit to said analyzer circuit and coupled to said timing means to receive time reference signals therefrom to selectively inhibit the transmission to said synthesizer circuit of time-displaced signals occurring at one or more selected times in a series.

4,357,710
RADIO APPARATUS

Ludwig Krämer, Windach; Otto Franz, and Walter Lotze, both of Landsberg, all of Fed. Rep. of Germany, assignors to Walter Dittel GmbH Luftfahrtgeratebau, Landsberg, Fed. Rep. of Germany

Filed Mar. 21, 1980, Ser. No. 132,450
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, 2913366
Int. Cl.³ H04B *1/38*
U.S. Cl. 455—76 **6 Claims**

1. Radio apparatus, in particular VHF transmitter and receiver apparatus for aeronautical radio, the apparatus comprising a housing having a front side and adapted to be received in a mounting, a frequency synthesizer, a channel tuning switch arranged at said front side of the housing for selecting any desired channel in a predetermined frequency range, at least one channel selector for tuning in a fixed channel, adjustment means in respect of said at least one channel selector, a change-over switch for effecting changeover between the channel tuning switch and said at least one channel selector and a liquid crystal display adapted to indicate the channel selected and wherein said channel tuning switch and said at least one channel selector are similar mechanical stepping switches, said

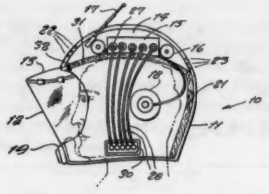


adjustment means for said at least one channel selector only being actuated by means of tools, said adjustment means further being only accessible when the housing is withdrawn from said mounting and wherein said change-over switch connects either said channel tuning switch or said at least one channel selector to the frequency synthesizer and to said liquid crystal display.

4,357,711
TWO WAY RADIO SAFETY HELMET

Joseph Drefko, c/o George Spector, 3615 Woolworth Bldg. 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jan. 29, 1981, Ser. No. 229,765
Int. Cl.³ H04B *1/38*
U.S. Cl. 455—89 **3 Claims**



1. A two-way radio motorcycle safety helmet, comprising in combination, a hollow shell, a removable windshield at a front of said shell, a peak over said windshield, a padding lining an inner side of said shell, and a radio system inside said shell wherein said system includes a two way radio in an upper part of said shell, an earphone at each side, a microphone at a front and a control console at a side of said shell, said console and radio having control knobs interconnected by cables whereby said radio is controlled by adjustment of said console knobs.

4,357,712
RADIO RECEIVER

Yasushi Kawakami, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

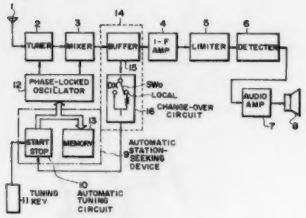
Filed Apr. 25, 1980, Ser. No. 143,921
Claims priority, application Japan, Apr. 26, 1979, 54-50871
Int. Cl.³ H03J *7/18*
U.S. Cl. 455—161 **2 Claims**

1. In a radio receiver provided with an automatic tuning circuit for locking the radio receiver onto the frequency of a received signal, a tuning sensitivity adjusting circuit comprising:

means for extracting a partially-processed received signal

from the radio receiver without substantially affecting the output of the radio receiver;

a gain selecting change-over circuit, responsive to the partially-processed signal from said extracting means, for selectably amplifying the partially-processed signal at a selected first one of a plurality of gain levels, and for



outputting the selectably amplified signal to the automatic tuning circuit as a station-locking signal; and

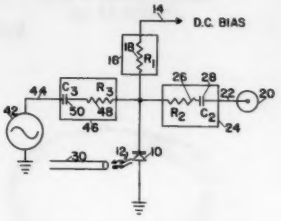
a time-delay circuit provided in the change-over circuit for delaying for a predetermined time application of a selectably amplified signal at a selected second gain level as said station locking signal in response to said changeover circuit selecting said second gain level.

4,357,713

METHOD AND APPARATUS FOR REDUCTION OF MODAL NOISE IN FIBER OPTIC SYSTEMS

James C. Blackburn, Adelphi, Md., and Jonathan Vanderwall, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 12, 1979, Ser. No. 74,634
Int. Cl.³ H04B 9/00
U.S. Cl. 455—609 **8 Claims**



1. An analogue optical signal system with reduced modal noise comprising:

a source for generating an optical output signal linearly related to a high frequency wide-band input signal;

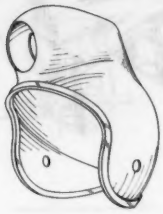
means for applying a biasing signal to said source wherein said source is biased to operate above threshold whereby said optical signal system operates as an analogue system;

transmission means for transmitting said output signal to a receiver; and

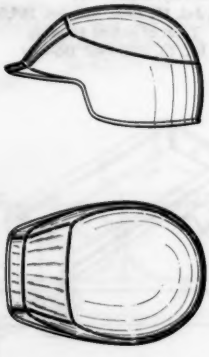
means for applying a high frequency signal above the Nyquist rate of said transmitted signal to said biasing signal.

NOVEMBER 2, 1982

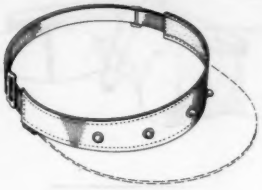
266,710
DIVER'S HELMET
Ronald Richardson, 1123 E. St., Springfield, Oreg. 97477
Filed Jul. 7, 1980, Ser. No. 166,119
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—231



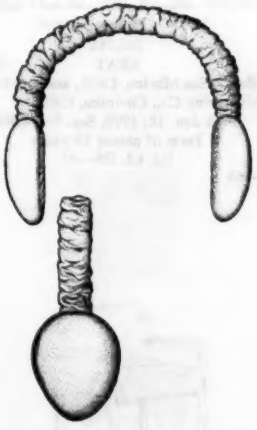
266,711
POLICE HELMET
Elwyn R. Gooding, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.
Filed Sep. 30, 1980, Ser. No. 192,450
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—231



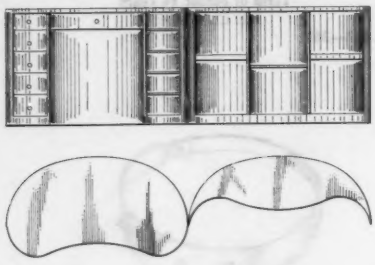
266,712
ILLUMINATED HEADBAND FOR VISOR TYPE HEADGEAR OR THE LIKE
Norman L. Van Valkenburgh, 3115 Via Colinas #301, Westlake Village, Calif. 91361
Filed May 27, 1980, Ser. No. 153,436
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—241



266,713
EARMUFF
Alan J. Resnick, and Darlene L. Resnick, both of 38 Irving St., Somerville, Mass. 02144
Filed Jan. 14, 1981, Ser. No. 225,056
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—259



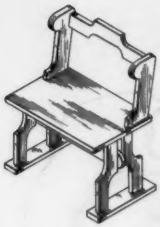
266,714
OPENABLE DESK AND SHELF COMBINATION UNIT
Gabriella Crespi, Via Montenapoleone 2, Milan, Italy
Filed Jan. 11, 1980, Ser. No. 111,223
Claims priority, application Italy, Jul. 12, 1979, 22091/B-79[U]
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—4



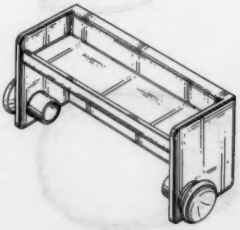
266,715
CONVERTIBLE SOFA
Harry R. Tiffany, III, Spring City, Tenn., assignor to Robert Tiffany Designs, Inc., Chattanooga, Tenn.
Filed Jan. 29, 1979, Ser. No. 7,389
The portion of the term of this patent subsequent to Jan. 26, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63

266,716
SEAT
John W. Caldwell, San Marino, Calif., assignor to Pacific Furniture Manufacturing Co., Compton, Calif.
Filed Jan. 18, 1979, Ser. No. 4,506
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69

266,717
CHAIR
Jerry W. Staton, Rte. 2, Box 195, Holly Pond, Ala. 35083
Filed Nov. 15, 1979, Ser. No. 94,459
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



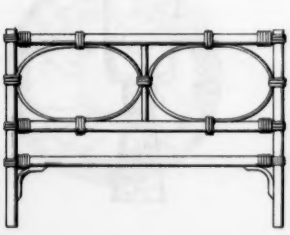
266,718
COMBINED PAPER TOWEL HOLDER AND SHELF
Lawrence Peabody, New York; Theodore W. Schriever, Syracuse, and Stephen K. Wenczl, Fayetteville, all of N.Y., assignors to Syroco, Inc., Syracuse, N.Y.
Filed Jul. 15, 1980, Ser. No. 169,060
Term of patent 14 years
Int. Cl. D23—*02*; D6—*04*
U.S. Cl. D6—91



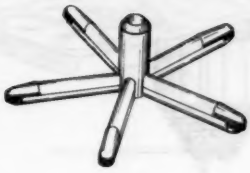
266,719
COMBINED WRITING TABLET AND SUPPORT ARM THEREFOR
Richard B. Hopkins, Pennsburg, Pa., assignor to Knoll International, Inc., New York, N.Y.
Filed Jun. 26, 1978, Ser. No. 919,404
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

266,720
COMBINED KITCHEN CABINET DOOR AND SUPPORT FRAME THEREFOR
Basil T. Moore, Rte. #2, Falls City, Nebr. 68355, and Morley Zipursky, 1021 N. 63rd St., Omaha, Nebr. 68132
Filed Sep. 17, 1979, Ser. No. 76,043
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192

266,721
FURNITURE ARM FRAME OR SIMILAR ARTICLE
Kristin M. Welch, Conover, N.C., assignor to The Lane Company, Inc., Altavista, Va.
Filed Oct. 29, 1980, Ser. No. 201,978
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192

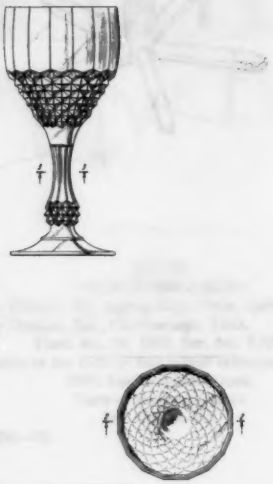


266,722
CHAIR BASE OR SIMILAR ARTICLE
William I. Stephens, Emmaus, Pa., assignor to Knoll International, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 62,006, Jul. 30, 1979. This application Jan. 18, 1980, Ser. No. 108,961
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196

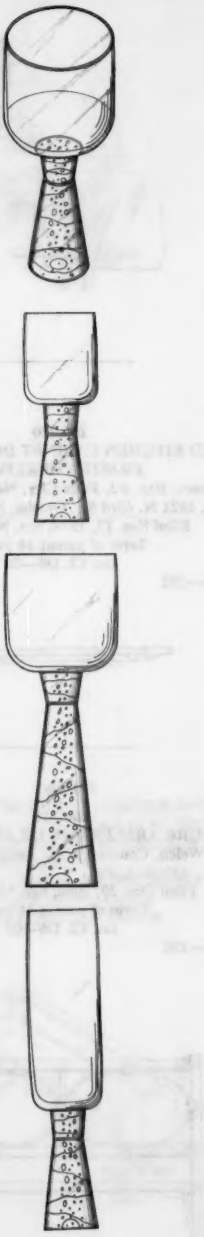


266,723
CUP
Alfred Blake, Hillsdale, N.J., assignor to American Commercial Incorporated, Gardena, Calif.
Filed May 30, 1980, Ser. No. 154,782
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—9

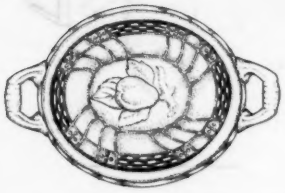
266,724
GOBLET OR SIMILAR ARTICLE
Jean-Jacques Durand, LaGarenne, 62510 Arques, France
Filed Sep. 8, 1980, Ser. No. 185,029
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—11



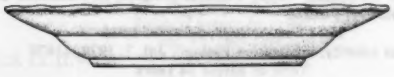
266,725
GOBLET OR SIMILAR ARTICLE
Timo Sarpaneva, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Nov. 9, 1979, Ser. No. 92,760
Claims priority, application Finland, May 18, 1979, 336/79
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—13



266,726
SUGAR BOWL
Alfred Blake, Hillsdale, N.J., assignor to American Commercial Incorporated, Gardena, Calif.
Filed May 30, 1980, Ser. No. 154,781
The portion of the term of this patent subsequent to Jun. 8, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D07—*01, 06*
U.S. Cl. D7—18



266,727
SAUCER
Alfred Blake, Hillsdale, N.J., assignor to American Commercial Incorporated, Gardena, Calif.
Filed May 30, 1980, Ser. No. 154,751
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—30



266,728
EGG CRACKER
James R. Ivy, 9001 Glacier, Apt. 138, Texas City, Tex. 77591
Filed Nov. 17, 1980, Ser. No. 207,258
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—41

266,729
CREAMER PITCHER
Alfred Blake, Hillsdale, N.J., assignor to American Commercial Incorporated, Gardena, Calif.
Filed May 30, 1980, Ser. No. 154,778
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—64

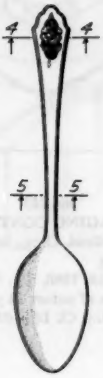
266,730
TEAPOT
Alfred Blake, Hillsdale, N.J., assignor to American Commercial Incorporated, Gardena, Calif.
Filed May 30, 1980, Ser. No. 154,780
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—66

266,731
COOKING APPLIANCE OR SIMILAR ARTICLE
John Downey, Willowdale, Canada, assignor to AMC Appliances, Weston, Canada
Filed Apr. 11, 1979, Ser. No. 29,711
Claims priority, application Canada, Jan. 22, 1979, 22-01-79-1
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—87

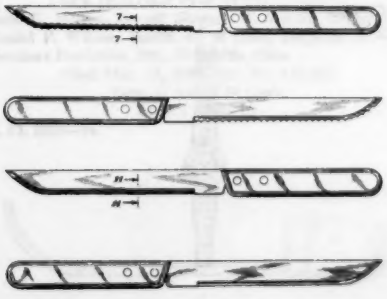
266,732
TOASTER
Craig B. Kelley, Wayne, Pa., assignor to SCM Corporation, New York, N.Y.
Filed Jul. 10, 1980, Ser. No. 168,830
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—93

266,733
GRILL
Kosti A. Reunanen, Lappi, Finland, assignor to Reunanen & Rovioia Oy, Finland
Filed Jan. 8, 1979, Ser. No. 1,912
Claims priority, application Finland, Jul. 7, 1978, 41478
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—110

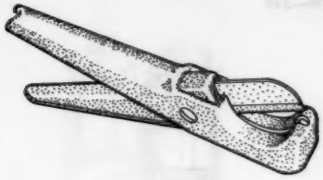
266,734
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Oct. 14, 1980, Ser. No. 196,536
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—150



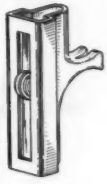
266,735
KNIFE
Jerome S. Hahn, 94-26 Poinciana Pl., Fort Lauderdale, Fla. 33324
Filed Aug. 19, 1980, Ser. No. 179,724
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—151



266,736
CUTTING TOOL FOR FLEXIBLE PLASTIC CONDUIT
Duane D. Robertson, 105 Flora Way, Golden, Colo. 80401
Filed Aug. 1, 1980, Ser. No. 174,726
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98



266,737
GRIPPABLE TUBING CLAMP, OR THE LIKE
Herbert F. D'Alo, Lakewood, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Continuation-in-part of Ser. No. 106,113, Dec. 21, 1979. This application Jun. 6, 1980, Ser. No. 156,974
The portion of the term of this patent subsequent to Aug. 24, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D8—*08*; D24—*02*
U.S. Cl. D8—396



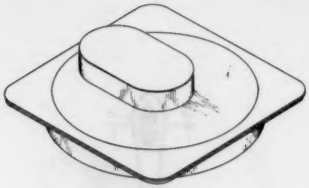
266,738
BOTTLE
Howard Cooper, 67 W. Chestnut St., Chicago, Ill. 60610
Filed Nov. 25, 1980, Ser. No. 210,416
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—307

266,739
JAR
William J. Plewes, Gormley; Alessandro Baggio, and Wolfgang Letzin, both of Toronto, all of Canada, assignors to General Foods Inc., Canada
Filed Nov. 4, 1980, Ser. No. 203,918
Claims priority, application Canada, May 6, 1980, 06-05-80-2
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—349

266,740
CONTAINER FOR DISPENSING ADHESIVES OR THE LIKE
Hugh J. Stock, Saratoga, Calif., assignor to Pacer Technology and Resources, Inc., Campbell, Calif.
Filed Nov. 23, 1979, Ser. No. 97,046
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—370

266,741
PLASTIC CONTAINER FOR LIQUIDS
John A. Cox, Bethel Park, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.
Filed Jul. 30, 1979, Ser. No. 62,208
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—401

266,742
PRINT ELEMENT CONTAINER
Bruce A. Claxton, Coral Springs, Fla., assignor to SCM Corporation, New York, N.Y.
Filed Nov. 28, 1980, Ser. No. 210,922
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—415



266,743
PACKAGING CONTAINER
Christopher Brown, Portland, Oreg., assignor to Hoody Corporation, Portland, Oreg.
Filed May 19, 1980, Ser. No. 151,203
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—416

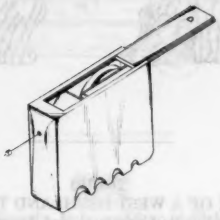
266,744
WRISTWATCH
Gerald Genta, Geneva, Switzerland, assignor to K. Hattori & Co., Ltd., Japan
Filed Aug. 26, 1980, Ser. No. 181,623
Claims priority, application Japan, Feb. 27, 1980, 55-7252
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—32

266,745

INK TROUGH

Chuang-Min Chiou, No. 415 Yung an Rd., T'Ao Yuan City, Taiwan

Filed May 6, 1980, Ser. No. 147,021
Claims priority, application Taiwan, Jan. 23, 1980, 6930146
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—61



266,746

COMBINED HARNESS AND FLEXIBLE MEASURING TAPE HOLDER FOR STUD FINDING

Donald G. Wilson, Dorset; Stephen D. Wilson, Chardon, and Daniel P. Wilson, Euclid, all of Ohio, assignors to Wilson Brothers Insulation, Inc., Montville, Ohio

Filed Mar. 24, 1980, Ser. No. 133,421
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—74

266,747

COMBINED TOY OWL AND CAGE CHARM

Ira B. Gilford, Ridgewood, N.J., assignor to Lawrence L. Reiner, Woodbury, N.Y.

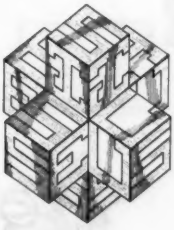
Filed Feb. 27, 1980, Ser. No. 125,044
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—2

266,748

PENDANT

Umberto Vandoni, Via Bolivia, 38 Palazzolo Milanese di Paderno, Dugnano (Milano), Italy

Filed Jul. 27, 1979, Ser. No. 61,449
Claims priority, application Italy, Jan. 30, 1979, 61904 B/79
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—61



266,749
DISC-SHAPED ORNAMENT
George C. Sun, One Cherry Hill, Cherry Hill, N.J. 08002
Filed Sep. 27, 1979, Ser. No. 79,571
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—121

266,750
POT FOR FLOWERS, PLANTS OR THE LIKE
John Kodet, 139 Queens Rd., Connell's Point, New South Wales, Australia (2221)
Filed Jul. 10, 1980, Ser. No. 167,247
Claims priority, application Australia, Feb. 1, 1980, 80,137
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152

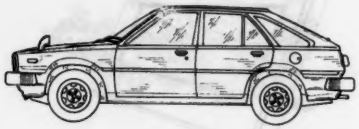
266,751
FIGURINE OF A HUSKY
Jesus A. Santa-Eulalia Carbajales, and Javier B. Santa-Eulalia Carbajales, both of Montevideo, Uruguay, assignors to John J. Madison Co., Inc., Laguna Hills, Calif.
Filed Oct. 4, 1979, Ser. No. 81,908
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

266,752
FIGURINE OF A WEST HIGHLAND TERRIER
Jesús A. Carbajales, Santa-Eulalia, and Javier B. Carbajales, Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Co., Inc., Laguna Hills, Calif.
Filed May 29, 1980, Ser. No. 154,587
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

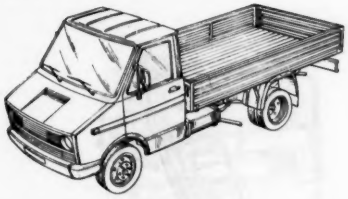
266,753
FIGURINE OF A WEST HIGHLAND TERRIER PUP
Jesus A. Santa-Eulalia Carbajales, and Javier B. Santa-Eulalia Carbajales, both of Montevideo, Uruguay, assignors to John J. Madison Co., Inc., Laguna Hills, Calif.
Filed May 29, 1980, Ser. No. 154,590
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

266,754
FIGURINE
Terry L. Taylor, 3109 N. Central Ave., Chicago, Ill. 60634
Filed Jul. 14, 1980, Ser. No. 168,098
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—159

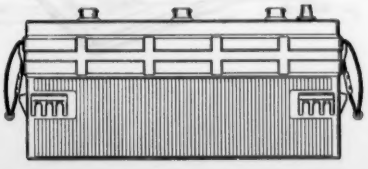
266,755
MOTORCAR
Hiroshi Zaima, Niiza, and Yoshitake Takahashi, Omiya, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 5, 1980, Ser. No. 147,546
Claims priority, application Japan, Nov. 12, 1979, 54-4740..
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91



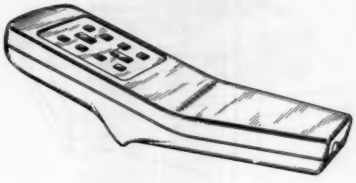
266,756
TRUCK
Guido Magnini, Brescia, Italy, assignor to Fiat Veicoli Industriali S.p.A., Turin, Italy
Filed Sep. 7, 1978, Ser. No. 940,239
Claims priority, application Italy, Mar. 14, 1978, 53021/78[U]
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—98



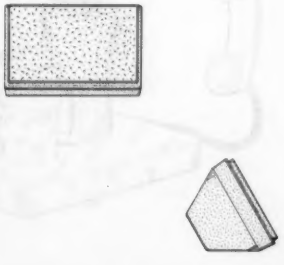
266,757
ELECTRICAL STORAGE BATTERY
Stephen W. Campbell; Eric E. Cragg; Michael J. Elwell, and Raymond A. Johnson, all of Birmingham, England, assignors to Lucas Industries Limited, Birmingham, England
Filed Apr. 1, 1980, Ser. No. 136,275
Claims priority, application United Kingdom, Oct. 2, 1979, 991799
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—8



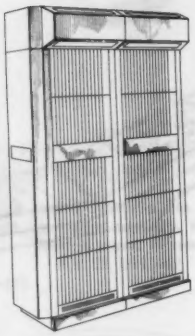
266,758
HAND-HELD CONTROL MODULE FOR AN ULTRASOUND DIAGNOSTIC IMAGING SYSTEM
Thomas M. Johannsen, Aurora; Raymond P. Mosley, Denver, and James P. Knoll, Englewood, all of Colo., assignors to Technicare Corporation, Solon, Ohio
Filed Mar. 24, 1980, Ser. No. 133,071
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12



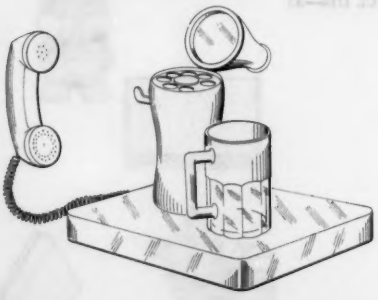
266,759
SPEAKER CABINET
Brock M. Jabara, Wichita, Kans., assignor to Superior Sound, Inc., Wichita, Kans.
Filed Aug. 11, 1980, Ser. No. 176,844
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33



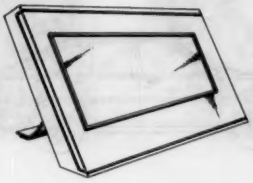
266,760
EQUIPMENT HOUSING
Peter D. H. Trussler, Ottawa, and Roger J. Bushnell, Aylmer, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Apr. 3, 1979, Ser. No. 26,801
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100



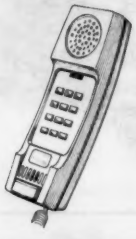
266,761
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jan. 15, 1980, Ser. No. 112,305
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



266,762
TELEPHONE LINE AND TRUNK STATUS DISPLAY
J. Scott Gibson, Ottawa, Canada, assignor to Mitel Corporation, Kanata, Canada
Filed Nov. 3, 1980, Ser. No. 203,767
Claims priority, application Canada, May 16, 1980, 16-05-80-2
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58

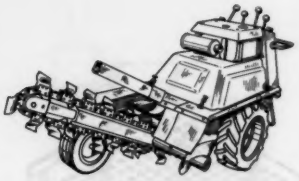


266,763
TELEPHONE HOUSING
Bernard A. Grae, Fort Worth, Tex., assignor to Tandy Corporation, Forth Worth, Tex.
Filed Feb. 4, 1980, Ser. No. 118,098
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—64

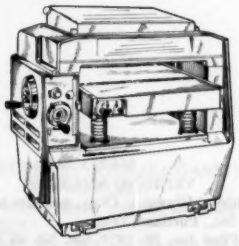


266,764
CABINET FOR AN INPUT-OUTPUT DEVICE
Gregory F. Fossella, Boston, Mass., and Charles E. Milliser, Waynesboro, Va., assignors to General Electric Company, Waynesboro, Va.
Filed Mar. 6, 1980, Ser. No. 127,928
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100

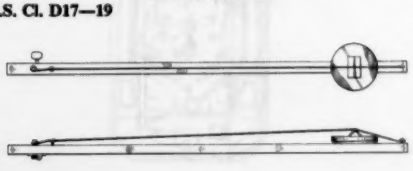
266,765
SELF-PROPELLED TRENCHING MACHINE
Charles A. Clune, Minster, Ohio, assignor to Midmark Corporation, Minster, Ohio
Filed Mar. 12, 1980, Ser. No. 129,522
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—21



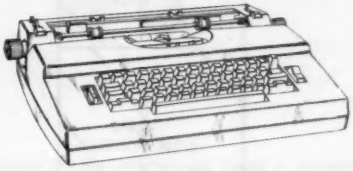
266,766
PLANER
Peter Lawson, Campinas, Brazil, assignor to Rockwell Do Brasil Industria E. Comercio Ltda., Brazil
Filed Nov. 19, 1979, Ser. No. 95,864
Claims priority, application Brazil, May 21, 1979, MI 3900357
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—127



266,767
STRINGED MUSICAL INSTRUMENT
Jesse Hyatt, 109 Johnson St., Lawrenceburg, Ky. 40342
Filed Apr. 25, 1980, Ser. No. 143,919
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—19

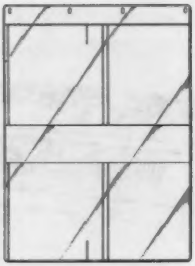


266,768
TYPEWRITER
Ernest M. Bevilacqua, Wilton; David C. Danielson, Rowaytun, both of Conn.; Robert E. Griffith, Lexington, Ky.; Allen D. Hawthorne, New Canaan, and Allan L. McCroskery, Weston, both of Conn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1980, Ser. No. 219,545
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—1



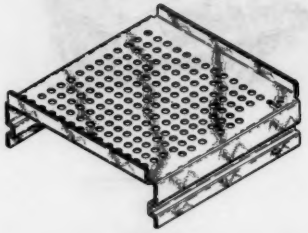
266,769
LETTERING PEN
Maria-Teresa B. Camps, Travesera de las Corts 287, Barcelona, Spain
Filed Oct. 2, 1980, Ser. No. 193,164
Term of patent 7 years
Int. Cl. D19—*06*
U.S. Cl. D19—51

266,770
LEAF FOR A PHOTOGRAPH ALBUM
Hans L. Wihlke, Stromkarlsvagen 57, S-161 38, Bromma, Sweden
Division of Ser. No. 974,618, Dec. 29, 1978, Pat. No. D. 262,040.
This application Aug. 24, 1981, Ser. No. 295,497
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—33

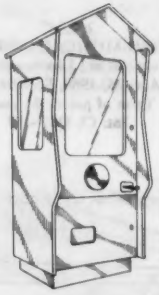


266,771
LEAF FOR A PHOTOGRAPH ALBUM
Hans L. Wihlke, Stromkarlsvagen 57, S-161 38, Bromma, Sweden
Division of Ser. No. 974,618, Dec. 29, 1978, Pat. No. D. 262,040.
This application Aug. 24, 1981, Ser. No. 295,498
Claims priority, application Sweden, Jun. 30, 1978, 781648
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—33

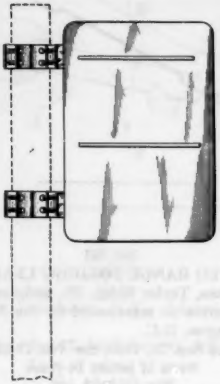
266,772
STACKING TRAY
James P. Sayers, 10534 Merriman Rd., Cupertino, Calif. 95014
Filed Apr. 30, 1980, Ser. No. 145,329
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—92



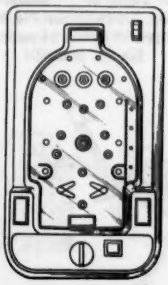
266,773
VENDING MACHINE
Robert D. Poirier, Milwaukie, Oreg., assignor to Bulk Manufacturing Co., Inc., Portland, Oreg.
Filed Jun. 18, 1979, Ser. No. 49,239
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—1



266,774
HANGING SIGN
Philip R. Brown, Huntington, N.Y., and Charles M. Baffo, Wilton, Conn., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Jul. 23, 1979, Ser. No. 59,711
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—41

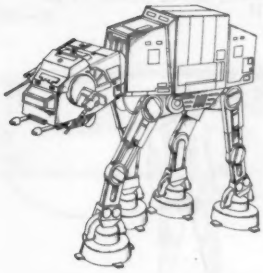


266,775
HAND-HELD ELECTRONIC PINBALL GAME HOUSING OR THE LIKE
Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.
Filed Mar. 14, 1980, Ser. No. 130,366
Claims priority, application Japan, Oct. 29, 1979, 54-45434
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

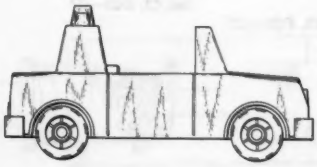


266,776
TOY CARRIAGE
Eugene J. Echterling, 22740 Macfarlane Dr., Woodland Hills, Calif. 91364
Filed Jul. 23, 1979, Ser. No. 59,886
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134

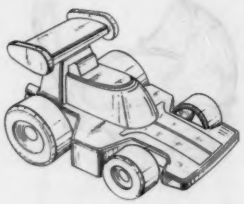
266,777
TOY VEHICLE
George W. Lucas, Jr., San Anselmo, and Joseph E. Johnston, Fairfax, both of Calif., assignors to Lucasfilm, Ltd., San Rafael, Calif.
Filed Feb. 5, 1981, Ser. No. 231,674
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



266,778
TOY POLICE CAR
Steven E. Hilko, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 27, 1981, Ser. No. 228,778
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—136



266,779
TOY RACING CAR
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Mar. 5, 1981, Ser. No. 240,783
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—137

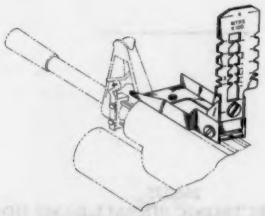


266,780
TOY FIGURE
John Mollo, N. R. Hungerford, England, assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Jul. 18, 1980, Ser. No. 170,042
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—171

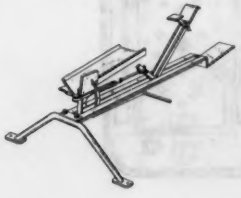
266,781
BRUSH ATTACHMENT FOR SKATE BOARD OR SIMILAR ARTICLE
William H. Harrison, P.O. Box 8863, Kansas City, Mo. 64109
Filed Sep. 11, 1980, Ser. No. 186,194
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—227

266,782
GOLFING AID
Richard E. Carter, R.R. 7, Box 108, Edwardsville, Ill. 62025
Filed Feb. 1, 1980, Ser. No. 117,813
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—234

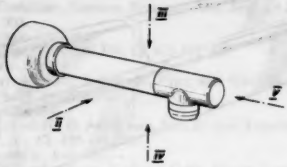
266,783
EXTENDED RANGE FOLDING LEAF SIGHT
Urban F. Stratman, Taylor Ridge, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sep. 26, 1980, Ser. No. 191,219
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—8



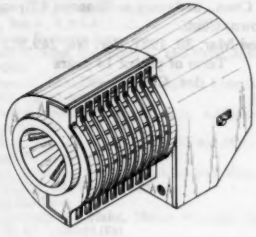
266,784
CLAY PIGEON LAUNCHER
Jack D. Sexton, 1499 Palma Dr., Ventura, Calif. 93003
Filed Sep. 22, 1980, Ser. No. 189,380
Term of patent 14 years
Int. Cl. D22—*04*
U.S. Cl. D22—99



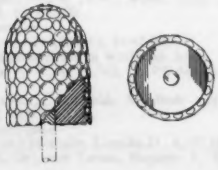
266,785
SPOUT
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Apr. 20, 1981, Ser. No. 255,527
Claims priority, application Australia, Jan. 5, 1981, 82981
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



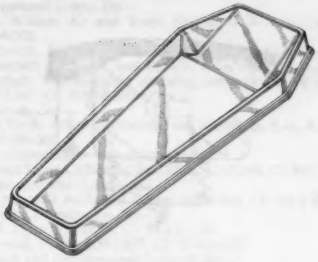
266,786
FAN
George Schmidt, Douglaston, N.Y., assignor to Salton, Inc., Bronx, N.Y.
Filed May 27, 1980, Ser. No. 153,192
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



266,787
GUM MASSAGING TIP
Deborah J. Refer, 6082 Adobe Falls Rd., San Diego, Calif. 92120
Filed Jul. 24, 1980, Ser. No. 171,980
Term of patent 14 years
Int. Cl. 24—*04*
U.S. Cl. D24—10

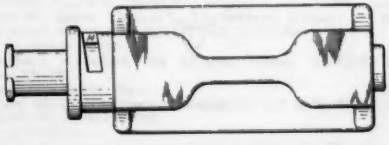


266,788
SUN BATHING TUB
Gayle K. DuBois, 932 SW. Palatine Hill Rd., Portland, Oreg. 97219, and Joyce E. Warner, 1210 Broadway, Longview, Wash. 98632
Filed Jun. 21, 1979, Ser. No. 50,658
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—38

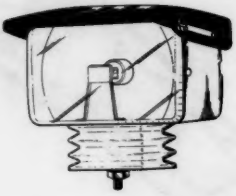


266,789
SWIMMING POOL AND SPA COMBINATION
Lino Z. Topete, 1845 E. San Antonio St., San Jose, Calif. 95116
Filed Jan. 18, 1980, Ser. No. 113,250
Term of patent 14 years
Int. Cl. 24—*01*; 23—*02*; 25—*99*
U.S. Cl. D24—38

266,790
PROTECTOR HOUSING FOR SQUEEZABLE VALVE
Kenneth R. McCord, Lakewood, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Apr. 24, 1979, Ser. No. 32,971
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—53

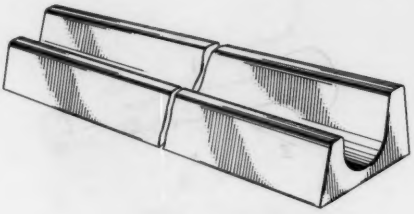


266,791
AUTOMOBILE AUXILIARY LIGHT
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 20, 1980, Ser. No. 161,302
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28

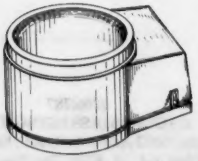


266,792
LAMP FIXTURE
Joanna W. Windolph, 35972 Hwy. 6, Hillrose, Colo. 80733
Filed Apr. 9, 1980, Ser. No. 138,507
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—84

266,793
CATTLE FEED BUNKER
Richard E. Bunger, and Roy J. Hancock, both of Phoenix, Ariz., assignors to Corral Industries, Inc., Phoenix, Ariz.
Filed Jul. 14, 1980, Ser. No. 168,559
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



266,794
ULTRASONIC CLEANER
William L. Puskas, Trumbull, and Jean G. M. Dussault, Naugatuck, both of Conn., assignors to Branson Ultrasonics Corporation, Newtown, Conn.
Filed Mar. 30, 1981, Ser. No. 249,212
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF NOVEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. C. Cossor Limited: *See*—
Fortescue, Michael, 4,357,606, Cl. 340-870.010.

Abe, Seiko: *See*—
Igashira, Toshihiko; Nomura, Ken; and Abe, Seiko, 4,356,804, Cl. 123-549.000.

Abex Corporation: *See*—
Khandros, Igor Y., 4,357,394, Cl. 428-595.000.

Achelpohl, Fritz: *See*—
Feldkamper, Richard; Achelpohl, Fritz; and Winnemoller, Aloys, 4,357,139, Cl. 493-204.000.

Ackerman, Neil R.: *See*—
Rooks, Wendell H., II; Ackerman, Neil R.; and Tomolonis, Albert J., 4,357,322, Cl. 424-177.000.

Adamant Kogyo Co., Ltd.: *See*—
Takehara, Hideaki; Wada, Yoshiyo; Goto, Kunio; Suga, Kyusaku; and Watanabe, Hitoshi, 4,357,699, Cl. 369-173.000.

Adams, Arthur C.; Aspnes, David E.; and Bagley, Brian G., to Bell Telephone Laboratories, Incorporated. Method for producing devices comprising high density amorphous silicon or germanium layers by low pressure CVD technique. 4,357,179, Cl. 148-1.500.

Adams, Laura A. Bicycle cover with lock holes. 4,356,831, Cl. 135-7.000.

Adaway, Timothy J.: *See*—
Tomalia, Donald A.; and Adaway, Timothy J., 4,357,464, Cl. 528-481.000.

Adkins, Richard C.: *See*—
Jeffery, Graham J.; and Adkins, Richard C., 4,356,693, Cl. 60-39.370.

Adler, Robert: *See*—
November, Dan; and Adler, Robert, 4,356,909, Cl. 198-472.000.

Adlerteg, Bo, to ASEA Aktiebolag. Electric switch. 4,357,509, Cl. 200-240.000.

Adlerwerke vorm. Heinrich Kleyer: *See*—
Kuhn, Lothar, 4,357,060, Cl. 312-351.000.

Advance Tapes (U.K) Limited: *See*—
Potaczek, Jan J., 4,356,819, Cl. 128-156.000.

AES Technology Systems, Inc.: *See*—
Ellis, James B.; Sims, Raymond E.; and Savit, Joseph, 4,356,679, Cl. 53-381.00R.
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Ellis, James B.; and Sims, Raymond E., 4,356,684, Cl. 53-492.000.

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Whitehouse, John A., 4,356,746, Cl. 83-411.00A.

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Vermeulen, Leon L.; Poot, Albert L.; and Van den Houte, Jozef W., 4,357,407, Cl. 430-204.000.

Aggarwal, Raj K.: *See*—
Mehra, Ravinder C.; Hahn, Heinz W.; and Aggarwal, Raj K., 4,357,240, Cl. 210-455.000.

Ahluwalia, Prabh S.: *See*—
Gallis, Anthony J.; and Ahluwalia, Prabh S., 4,356,993, Cl. 249-27.000.

Aidlin, Samuel S.; and Aidlin, Stephen H. Machine for distributing groups of workpieces to different destinations. 4,356,907, Cl. 198-427.000.

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Aidlin, Samuel S.; and Aidlin, Stephen H., 4,356,907, Cl. 198-427.000.

Airmaster Fan Company: *See*—
Breining, Frank E., 4,357,506, Cl. 200-52.00R.

Aisin Seiki Company, Limited: *See*—
Iwasaki, Shinichiro, 4,357,114, Cl. 374-176.000.

Aizawa, Tatsuo: *See*—
Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,357,406, Cl. 430-137.000.

Ajinomoto Company Incorporated: *See*—
Miyoshi, Takeshi; Takeuchi, Koji; Nukui, Tatsuo; and Oshida, Hidetaka, 4,357,434, Cl. 524-178.000.

Akiba, Keiji: *See*—
Taketomi, Chiaki; Miura, Tadao; Akiba, Keiji; and Hirose, Koji, 4,357,636, Cl. 360-62.000.

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Teiling, Torbern, 4,356,758, Cl. 89-41.00E.

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Hagstrom, Hans A. R., 4,356,763, Cl. 100-48.000.

Akzo NV: *See*—
Zengel, Hans-Georg; Bergfeld, Manfred; and Zielke, Rainer, 4,357,447, Cl. 525-329.400.

Akzona Incorporated: *See*—
Frank, Dieter; and Metcalfe, Lincoln D., 4,357,181, Cl. 148-6.14R.
Schall, Roy F., Jr.; and Lewis, Stephen J., 4,357,142, Cl. 23-230.00B.

Alarcon Opazo, Jorge. Compact portable digital multimeter for instantaneous measuring of height differences independently of visibility. 4,356,639, Cl. 33-367.000.

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Luciano, William A.; and Yook, Steven S. W., 4,357,386, Cl. 428-234.000.

Alberts, Heinrich; Fischer, Winfried; Muller, Friedemann; Peters, Horst; Leuschke, Christian; and Baasch, Hans-Peter, to Bayer Aktiengesellschaft. Thermoplastic moulding compositions of cellulose esters. 4,357,267, Cl. 524-40.000.

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Albrecht, M. Grant: *See*—
Heinz, John E.; and Albrecht, M. Grant, 4,357,640, Cl. 360-119.000.

Alcan Aluminiumwerke GmbH: *See*—
Daude, Otto; and Peckmann, Heinz, 4,356,886, Cl. 181-250.000.

Alcan Aluminum Corporation: *See*—
Gailey, J. Lynn, 4,356,673, Cl. 52-127.100.
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Aldridge, Clyde L.: *See*—
Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,357,229, Cl. 208-10.000.

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Alfa-Laval AB: *See*—
Wahlstrom, Lennart; and Ehnstrom, Lars K. J., 4,356,932, Cl. 220-329.000.

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Carr, Robert B.; and Erikson, Richard A., 4,356,960, Cl. 233-46.000.

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Ragland, Evan L., 4,357,618, Cl. 346-159.000.

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Gray, Richard, 4,357,591, Cl. 338-162.000.

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Deming, Andrew F.; and Todd, Ronald C., 4,357,564, Cl. 318-280.000.

Allied Chemical Corporation: *See*—
Osterman, Harry F.; and Nylen, George C., 4,357,212, Cl. 202-170.000.

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Vanderkooi, Nicholas, Jr.; Haylock, John C.; Schulze, Stephen R.; and Tuller, Harold W., 4,357,268, Cl. 524-285.000.

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Allori, Raymond J.: *See*—
Kestian, Anthony M.; and Allori, Raymond J., 4,356,878, Cl. 180-235.000.

Alps Electric Company, Ltd.: *See*—
Okuya, Tsutae, 4,357,592, Cl. 338-198.000.
Shirakawa, Takashi; and Izumi, Hiroshi, 4,356,607, Cl. 29-25.420.

Alvarez, Joseph A., III; Gobioff, Bruce D.; and West, Lynn P., to International Business Machines Corp. Adaptive error encoding in multiple access systems. 4,357,700, Cl. 370-83.000.

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Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.

Amano Corporation: *See*—
Yoshiharu, Kuwabara; and Kazushi, Azuma, 4,357,615, Cl. 346-134.000.

Amchem Products, Inc.: *See*—
Leister, Harry M.; Donovan, Joseph C.; and Hall, Wilbur S., 4,357,372, Cl. 427-345.000.

Amemiya, Norio: *See*—
Sugawa, Kazuo; and Amemiya, Norio, 4,357,095, Cl. 355-3.00R.

American Cyanamid Company: *See*—
Nair, Vijay G.; Joseph, Joseph P.; and Bernstein, Seymour, 4,357,326, Cl. 424-180.000.
American Home Products Corporation: *See*—
Hon, Edward H.; and Dali, Carmelo, 4,356,610, Cl. 29-157.00R.
American Precision Industries Inc.: *See*—
Helfritch, Dennis J.; and Gonas, Edward J., 4,357,151, Cl. 55-6.000.
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Amesbury, Maurice G. High speed film advancement mechanism and system therefor. 4,357,082, Cl. 352-78.00R.
AMF Incorporated: *See*—
Mossey, Robert A., 4,356,892, Cl. 187-9.00R.
AMP Incorporated: *See*—
Fortuna, Jon A., 4,357,510, Cl. 200-283.000.
Hoffman, Norman E., 4,356,627, Cl. 29-849.000.
Kam, Lit-Yan; and Olsson, Billy E., 4,357,065, Cl. 339-97.00R.
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Amundsen, Joseph; Goodwin, Robert J.; and Wetzel, William H., to Reichhold Chemicals, Inc. Water soluble pentachlorophenol and tetrachlorophenol wood treating systems containing fatty acid amine oxides. 4,357,163, Cl. 106-18.350.
Anderka, Gerold, to Koh-I-Noor Rapidograph, Inc. Writing apparatus. 4,356,632, Cl. 33-18.00R.
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Anderson, Richard B.; and Kalenda, Norman W., to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible pyridylazo(dialkylamino) phenol magenta dye-releasing compounds and precursors thereof. 4,357,410, Cl. 430-223.000.
Anderson, Richard B.; and Kalenda, Norman W., to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible bridged azoaminophenol magenta dye-releasing compounds and precursors thereof. 4,357,412, Cl. 430-223.000.
Anderson, Roy A.: *See*—
Davis, Lanny C.; and Anderson, Roy A., 4,356,755, Cl. 84-343.000.
Anderson, Russell L.: *See*—
Gaylord, Edson C.; Black, David K.; Anderson, Russell L.; and Morton, Philip O., 4,356,870, Cl. 169-65.000.
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Andre, Jean D.; Killis, Andreas; Le Nest, Jean-Francois; and Cheradame, Herve M., to L'Etat Francais represente par le Delegue General pour l'Armement. Macromolecular material of ionic conduction. 4,357,401, Cl. 429-192.000.
Andrews, Merritt B.; and Rothman, Edward A., to United Technologies Corporation. Composite structure. 4,356,678, Cl. 52-799.000.
Anglemyer, Edward B. Carrying case for cement finisher's tools. 4,356,916, Cl. 206-372.000.
Ansorge, Al, to Lester Engineering Company. Apparatus for dispensing measured amounts of molten metal. 4,356,940, Cl. 222-596.000.
Anthony, John A. System for conserving energy and washing agents in a dishwasher. 4,357,176, Cl. 134-18.000.
Antkowiak, Thomas A.; and Serbin, David J., to Firestone Tire & Rubber Company, The. Process for preparing polyphosphazene polymers containing fluoroalkoxy and/or aryloxy substituents. 4,357,458, Cl. 528-167.000.
Antonczyk, Andrew R.: *See*—
Antonczyk, Raymond L.; and Antonczyk, Andrew R., 4,356,650, Cl. 40-160.000.
Antonczyk, Raymond L.; and Antonczyk, Andrew R., to Antonczyk, Andrew R. Enclosure and mounting device for relief artworks. 4,356,650, Cl. 40-160.000.
Apfelbeck, Otto L.; and Urish, Joseph M., to Westinghouse Electric Corp. Electrical heater controller for aircraft window heat control. 4,357,524, Cl. 219-501.000.
Apontoweil, Peter; and Krasselt, Manfred M., to Gist-Brocades N. V. Infectious bronchitis vaccine for poultry. 4,357,320, Cl. 424-89.000.
Appel, Cornelis; and Kuilman, Bartel, to Shell Oil Company. Pump plug for use in well operations. 4,356,865, Cl. 166-153.000.
Appleby, Anthony J., to Electric Power Research Institute, Inc. Photoelectrochemical cell employing discrete semiconductor bodies. 4,357,400, Cl. 429-111.000.
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Ikenoue, Tsuneo; Liu, Shin-yng; Umemoto, Shuichi; and Arai, Naoki, 4,357,654, Cl. 363-21.000.
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Archibald, John L.; and Boyle, John T. A., to John Wyeth & Brother Limited. N-Substituted-2(8-halo and trifluoromethyl 4-quinolylamino)benzamides and analgesic use thereof. 4,357,333, Cl. 424-258.000.
Arguto, Inc.: *See*—
Mellor, H. Clay, 4,357,249, Cl. 252-12.000.
Ariga, Shoji; and Suzuki, Kazuo, to Clarion Co., Ltd. Radiating device for power amplifier etc. 4,356,864, Cl. 165-80.00B.
Arinc Research Corporation: *See*—
Brown, Harry W., 4,357,137, Cl. 464-75.000.
Arita, Satoshi; Touge, Kiyomi; Shida, Akio; and Yamaura, Sigenobu, to Mitsui Mining & Smelting Co., Ltd. Cathode base plate for electrolytic refining. 4,357,225, Cl. 204-281.000.
Armstrong, Harold F.: *See*—
Hollis, Thomas, Jr.; and Armstrong, Harold F., 4,357,122, Cl. 407-42.000.
Armstrong, Lee R., to RCA Corporation. Testing the power of a turbocharged internal combustion engine. 4,356,725, Cl. 73-118.000.
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Rosenau, Clifford M., 4,356,641, Cl. 34-46.000.
Armstrong World Industries, Inc.: *See*—
Buckwalter, Mervin R.; and Ray, Leonard N., Jr., 4,357,189, Cl. 156-230.000.
Cooper, John H., 4,357,373, Cl. 427-358.000.
Harris, Thomas G., 4,357,457, Cl. 528-159.000.
Arnold, Sara J.; and Foster, Kenneth D., to Canada, Her Majesty the Queen in right of. Gaseous reagent generator. 4,357,309, Cl. 423-486.000.
Asahi Glass Company Ltd.: *See*—
Ogawa, Shoichi, 4,357,374, Cl. 428-1.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Satoh, Eiji; Matsushita, Tetsuo; Ishida, Atsushi; Ishitobi, Tamio; and Muraoka, Shigemitsu, 4,357,389, Cl. 428-373.000.
Seko, Maomi, 4,357,218, Cl. 204-98.000.
Takasa, Kenji; Hirakawa, Keizo; Nishimaru, Hiroji; and Honda, Makoto, 4,357,276, Cl. 260-319.100.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Okura, Zenichi; Haneishi, Yasuyuki; and Kohmoto, Shinsuke, 4,357,089, Cl. 354-286.000.
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Watanabe, Yoshiaki; Yokoo, Chihiro; Asaka, Toshifumi; Onodera, Akira; Sota, Kaoru; and Sawada, Jiro, 4,357,470, Cl. 544-27.000.
Asano, Noriyuki: *See*—
Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,357,085, Cl. 354-25.000.
Aschauer, Hans, to Voest-Alpine Aktiengesellschaft. Bending machine. 4,356,716, Cl. 72-322.000.
ASEA Aktiebolag: *See*—
Adlerteg, Bo, 4,357,509, Cl. 200-240.000.
Ashman, Stewart J., to Metallisation Limited. Metal spraying apparatus. 4,356,971, Cl. 239-84.000.
Aspnes, David E.: *See*—
Adams, Arthur C.; Aspnes, David E.; and Bagley, Brian G., 4,357,179, Cl. 148-1.500.
Atalla, Martin M., to Atalla Technovations. Multilevel security apparatus and method. 4,357,529, Cl. 235-380.000.
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Atalla, Martin M., 4,357,529, Cl. 235-380.000.
Atanasoff, John V.; Clark, W. Kenneth; Henderson, David; and Wreghitt, Kenneth W., to Avco Corporation. Overflying munitions device and system. 4,356,770, Cl. 102-384.000.
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McLoughlin, John; and Athanasiades, Neocles, 4,357,034, Cl. 280-751.000.
Atkinson, Hugh H., Jr. Vacuum ball insulation. 4,357,375, Cl. 428-11.000.
Atlantic Richfield Company: *See*—
Blieden, Harry R.; and Yerkes, John W., 4,357,486, Cl. 136-247.000.
Auborn, James J.; and Granstaff, Shelie M., Jr., to Bell Telephone Laboratories, Incorporated. Alkali metal-sulfur cells. 4,357,399, Cl. 429-104.000.
Aubry, Michel; Bernard, Jean-Claude; and Philipon, Paul, to Societe des Electrodes et Refractaires Savoie/SERS. Electric furnace for the calcination of carbonaceous materials. 4,357,210, Cl. 202-85.000.
Australasian Training Aids, Pty., Ltd.: *See*—
Knight, Lindsay C., 4,357,531, Cl. 235-400.000.
Automobiles Peugeot: *See*—
Lalanne, Andre P., 4,357,046, Cl. 296-37.160.
Avco Corporation: *See*—
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Avedko, B.V.: *See*—
Kooiman, Pieter L., 4,357,127, Cl. 414-99.000.
Avsan, Oleg; and Isaksson, Nils K., to Telefonaktiebolaget L M Ericsson. Arrangement for branching an information flow. 4,357,679, Cl. 364-900.000.
Ayoub, Stephen J.; MacPherson, Douglas; and Rizzo, Thomas, to Ayoub, Stephen J. Apparatus and method for testing transmissions. 4,356,724, Cl. 73-118.000.
B. F. Goodrich Company, The: *See*—
Shah, Pravinchandra K., 4,357,442, Cl. 524-745.000.
Yi, Kong S., 4,357,449, Cl. 526-74.000.
Baasch, Hans-Peter: *See*—
Alberts, Heinrich; Fischer, Winfried; Muller, Friedemann; Peters, Horst; Leuschke, Christian; and Baasch, Hans-Peter, 4,357,267, Cl. 524-40.000.
Baba, Yoshio; Tanabe, Zenichi; Fukui, Toshiyasu; and Ikeda, Hiroshi, to Sumitomo Light Metal Industries, Ltd. Brazing fin stock for use in aluminum base alloy heat exchanger. 4,357,397, Cl. 428-654.000.
Babcock, Warner K., to Construction Products Research, Inc. Method and composition for controlling volume change in fast setting, fluid impermeable cementitious systems. 4,357,166, Cl. 106-89.000.
Babel, Werner; and Krug, Willi, to Maho Werkzeugmaschinenbau Babel & Co. Disk magazine tool holder. 4,356,620, Cl. 29-568.000.

Bach, Eugen; and Bach, Jurgen A. Self-closing tap valve. 4,356,998, Cl. 251-354.000.

Bach, Jurgen A.: *See*—
Bach, Eugen; and Bach, Jurgen A., 4,356,998, Cl. 251-354.000.

Bachmann, Duncan: *See*—
Sandberg, Glenn A.; Janssen, Wilbur; and Bachmann, Duncan, 4,356,595, Cl. 17-45.000.

Bachmann, Peter, to Ebauches Bettlach, S.A. Reduction gear for electronic timepiece. 4,357,695, Cl. 368-322.000.

Bachmann, Rudolf: *See*—
Vaeth, Guenter; Bachmann, Rudolf; Senkpiel, Werner; Hartmann, Hans-Joerg; Falk, Roland; and Motz, Herbert, 4,357,378, Cl. 428-64.000.

Baeker, Klaus, to Siemens Aktiengesellschaft. X-ray diagnostic system comprising tomographic apparatus. 4,357,708, Cl. 378-25.000.

Baer, Ralph H.; Cope, Leonard D.; Holt, Oliver D.; and Morrison, Howard J., to Sanders Associates, Inc.; and Marvin Glass & Associates. Interactive game and control therefor. 4,357,014, Cl. 273-85.00G.

Bagley, Brian G.: *See*—
Adams, Arthur C.; Aspnes, David E.; and Bagley, Brian G., 4,357,179, Cl. 148-1.500.

Bailie, Robert E. Transportable process modules. 4,356,785, Cl. 114-264.000.

Bain, Benjamin H., Jr., to General Electric Company. Electric flatiron having a frictionally restrained swiveled power cord. 4,357,519, Cl. 219-256.000.

Baines, Eric: *See*—
Weyn, Hendrik F.; Baines, Eric; and Harvey, Kenneth, 4,357,317, Cl. 424-52.000.

Bains, Gurdip S.: *See*—
Kappenhagen, George A.; Martin, Niles J.; Pace, John E.; Sette, Robert A.; Randall, Charles E.; Jackson, Leigh F.; and Bains, Gurdip S., 4,356,895, Cl. 187-17.000.

Baird, John K.: *See*—
Sandford, Paul A.; and Baird, John K., 4,357,260, Cl. 252-363.500.

Baker International Corporation: *See*—
Carmody, Michael A., 4,356,867, Cl. 166-373.000.

Baker, Phillip L. Water-filled weight bag. 4,357,009, Cl. 272-96.000.

Bako, Lazlo, to Presto Lock, Inc. Hardware assembly for luggage and the like. 4,356,712, Cl. 70-69.000.

Ball, David N., to Graviner Limited. Fire and explosion detection. 4,357,534, Cl. 250-339.000.

Ball, Dean M.: *See*—
Brown, Carole E.; Ball, Dean M.; Killip, Graham R.; and Olivier, James P., 4,356,727, Cl. 73-243.000.

Banos, Zoltan: *See*—
Takacs, Istvan; Felmeri, Jozsef; Kerey, Gyorgy; Rudolf, Peter; Banos, Zoltan; Vereczkey, Endre; and Bosits, Gyula, 4,357,306, Cl. 422-254.000.

Barcrest Limited: *See*—
Rock, Brian, 4,357,567, Cl. 318-687.000.

Bardenstein, Albert, to Berlin, Irwin J. Truss assembly unit. 4,356,948, Cl. 227-48.000.

Barker, David, to Mars Limited. Method of reducing fishy odor of packaged fish product. 4,357,362, Cl. 426-643.000.

Barkow, William H.; and Gross, Josef, to RCA Corporation. Color TV display system. 4,357,586, Cl. 335-211.000.

Barlow, Michael T.; and Stewart, David G., to British Petroleum Company Limited, The. Process for the production of ethanol by the liquid phase hydrocarbonylation of methanol. 4,357,480, Cl. 568-902.000.

Barlow, William R. Rotatable note holder. 4,356,651, Cl. 40-308.000.

Barnes, Russell M.: *See*—
Young, Raymond R.; Barnes, Russell M.; and Wendel, Donald W., 4,356,923, Cl. 211-49.00D.

Barnes, William M., to Seven-Up Company, The. Method and apparatus for heating containers having a product liquid therein. 4,356,681, Cl. 53-440.000.

Barry Wright Corporation: *See*—
Peterson, Robert R.; and Ventura, Daniel S., 4,357,057, Cl. 308-26.000.

Bartko, John; Felice, Patrick E.; and Blais, Phillip D., to Westinghouse Electric Corp. High resolution lithography using protons or alpha particles. 4,357,417, Cl. 430-323.000.

Bartlett, Allen J.; and Lewis, Robert M., to Helix Technology Corporation. Cryopump. 4,356,701, Cl. 62-55.500.

Bartlett, Robert L.: *See*—
Legler, John G.; and Bartlett, Robert L., 4,356,750, Cl. 83-816.000.

Bartow, Richard J., to Clark Equipment Company. Upright for lift truck. 4,356,891, Cl. 187-9.00E.

Basalay, Robert J.: *See*—
West, C. Thomas; and Basalay, Robert J., 4,357,149, Cl. 44-68.000.

BASF Aktiengesellschaft: *See*—
Hartmann, Heinrich; Hoffmann, Gerhard; and Lenz, Werner, 4,357,414, Cl. 430-275.000.
Lehner, August; Gimpel, Juergen; Buethe, Ingolf; Hartmann, Heinrich; and Schenck, Hans-Uwe, 4,357,221, Cl. 204-181.00R.
Vaeth, Guenter; Bachmann, Rudolf; Senkpiel, Werner; Hartmann, Hans-Joerg; Falk, Roland; and Motz, Herbert, 4,357,378, Cl. 428-64.000.

BASF Farben & Fasern AG: *See*—
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,356,604, Cl. 28-255.000.

Battelle Memorial Institute: *See*—
Sachetto, Jean-Pierre; Michel, Jean-Pierre; Cuccolo, Sergio; and Regnault, Alain, 4,357,467, Cl. 536-56.000.
Zurcher, Edwin; Negaty-Hindi, Guy; and Pujol, Carlos, 4,356,688, Cl. 57-22.000.

Batzer, Hans; and Sinnreich, Joel, to Ciba-Geigy Corporation. Photocurable polymers obtained from succinylosuccinic acid and maleic acid derivatives, processes for the preparation of the polymers, and use of the polymers. 4,357,453, Cl. 526-271.000.

Baum, John W.: *See*—
Varma, Matesh N.; and Baum, John W., 4,357,536, Cl. 250-397.000.

Bauman, Jack L., to International Harvester Co. Equalized furrow forming apparatus for a seed planter. 4,356,780, Cl. 111-85.000.

Baumann, Hans D. Lamellate fluid resistance device. 4,356,843, Cl. 138-43.000.

Baumgarten, Ronald. Thermally-integrated heat exchanger and refrigerator. 4,356,706, Cl. 62-238.600.

Baxter Travenol Laboratories, Inc.: *See*—
Chan, Catherine T.; and Gravallese, Debra A., 4,357,310, Cl. 424-1.000.
Madsen, David C.; and Tucker, Hugh N., 4,357,343, Cl. 424-274.000.
Thomas, William R., 4,357,321, Cl. 424-101.000.

Bayer Aktiengesellschaft: *See*—
Alberts, Heinrich; Fischer, Winfried; Muller, Friedemann; Peters, Horst; Leuschke, Christian; and Baasch, Hans-Peter, 4,357,267, Cl. 524-40.000.
Heywang, Gerhard; Kuhle, Engelbert; Hammann, Ingeborg; and Homeyer, Bernhard, 4,357,329, Cl. 424-212.000.
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,357,338, Cl. 424-269.000.
Nicklaus, Eberhard; Warncke, Heinz; Pross, Wilhelm; and Hartl, Wolfgang, 4,357,300, Cl. 422-62.000.
Sattlegger, Hans; Schnurrbusch, Karl; Boll, Manfred; and Friemann, Hans, 4,357,438, Cl. 524-490.000.
Steffen, Ulrich; Alberts, Heinrich; and Morbitzer, Leo, 4,357,445, Cl. 525-244.000.
Stemmler, Ingo; Muller, Hanns-Peter; and Wagner, Kuno, 4,357,255, Cl. 252-182.000.

Bearden, Roby, Jr.; and Aldridge, Clyde L., to Exxon Research and Engineering Co. Catalysts and hydrocarbon treating processes utilizing the same. 4,357,229, Cl. 208-10.000.

Beaulieu, Bryan J., to Rupp Industries, Inc. Framing system for display panels. 4,356,648, Cl. 40-155.000.

Beck, Henry R., to Westinghouse Electric Corp. Phase reversal switch mechanism. 4,357,502, Cl. 200-1.00V.

Beck, William H., to Garrett Corporation, The. Three-phase inverter. 4,357,655, Cl. 363-42.000.

Becker, James R.; and Raymond, Edward L., to Cameron Iron Works, Inc. Method of producing a forged product. 4,356,612, Cl. 29-157.10R.

Beckman Instruments, Inc.: *See*—
Crosby, John B., 4,357,061, Cl. 339-17.00C.

Beckman, Ronald H.; and Yarme, Howard K., to Vaughan Walls, Inc. Partitioning system. 4,356,672, Cl. 52-36.000.

Beffano, John J., to Quality Valve and Machine Works, Inc. Flow control mechanism for high pressure wells. 4,356,997, Cl. 251-214.000.

Beffano, John J.: *See*—
Linder, Morris B.; and Beffano, John J., 4,356,996, Cl. 251-82.000.

Behn, Reinhard, to Siemens Aktiengesellschaft. Method for the manufacture of layer capacitors. 4,356,608, Cl. 29-25.420.

Belhomme, Charles J. G., to U.S. Philips Corporation. Composite thermistor component. 4,357,590, Cl. 338-23.000.

Bell Telephone Laboratories, Incorporated: *See*—
Adams, Arthur C.; Aspnes, David E.; and Bagley, Brian G., 4,357,179, Cl. 148-1.500.
Andersen, Brad E.; Hamilton, Billy H.; and Schroeder, Robert E., 4,357,572, Cl. 323-286.000.
Anderson, Thomas W.; Jenness, Robert V.; Milczarek, Richard J.; Schaefer, Edwin M., III; and Stekl, Robert M., 4,357,493, Cl. 179-6.040.
Auborn, James J.; and Granstaff, Shelie M., Jr., 4,357,399, Cl. 429-104.000.
Canniff, Ronald J., 4,357,701, Cl. 370-100.000.
Freyman, Ronald L., 4,357,675, Cl. 364-786.000.
Johnson, David W., Jr.; and Yan, Man F., 4,357,251, Cl. 252-62.570.
McWilliams, Stephen G., 4,357,601, Cl. 340-506.000.
Muehlner, Dirk J.; Nelson, Terence J.; and Wolfe, Raymond, 4,357,684, Cl. 365-36.000.
Nahas, Joseph J., 4,357,496, Cl. 179-84.0VF.
Nelson, Terence J., 4,357,683, Cl. 365-36.000.
Shapiro, Herbert M., 4,357,682, Cl. 365-16.000.

Bellhouse, Brian J.; and Haworth, William S. Transfer membrane apparatus. 4,357,239, Cl. 210-321.300.

Beloit Corporation: *See*—
Alheid, Robert J., 4,357,370, Cl. 427-211.000.

Belt Master, Inc.: *See*—
Gabrielson, David L.; and Mohr, Larry D., 4,356,671, Cl. 51-325.000.

Benchmark Tool Company: *See*—
Legler, John G.; and Bartlett, Robert L., 4,356,750, Cl. 83-816.000.

Bendix Corporation, The: *See*—
Schira, John J.; and Leung, Chun-Keung, 4,357,662, Cl. 364-431.080.
Waghorn, Robert D., 4,356,626, Cl. 29-747.000.

Bendoni, Leonard V.; and Hanna, William L., to Polaroid Corporation. Disposable film processing kit. 4,357,091, Cl. 354-304.000.

Bengtson, Fred B. Door head gasket for overhead doors and the like. 4,356,856, Cl. 160-209.000.

Benham, Albert A., to Champion International Corporation. Easy access dispensing carton with dust barrier. 4,356,950, Cl. 229-11.000.

Benjamin, Charles E.; and Crawford, David J., to International Business Machines Corporation. Semiconductor device array mask inspection method and apparatus. 4,357,540, Cl. 250-491.100.

Benkert, Donald E. Earthquake protected vibration isolator. 4,356,992, Cl. 248-578.000.

Bentley, Stanley L.; and Bloomer, Frank A., to Ransburg Corporation. Fire-extinguishant system. 4,356,868, Cl. 169-26.000.

Berg, David A., to Allis-Chalmers Corporation. Top mounted lift ram for tractor. 4,357,031, Cl. 280-461.00A.

Bergeron, David L.; Fleming, Daniel J.; and Stephens, Geoffrey B., to International Business Machines Corporation. Schottky barrier diode with controlled characteristics and fabrication method. 4,357,178, Cl. 148-1.500.

Bergfeld, Manfred: *See*—
Zengel, Hans-Georg; Bergfeld, Manfred; and Zielke, Rainer, 4,357,447, Cl. 525-329.400.

Bergwerksverband GmbH: *See*—
Handrick, Kurt; and Kolling, Georg, 4,357,450, Cl. 526-76.000.

Berkshire, David C.; Lawson, Jimmie B.; and Richardson, Edwin A., to Shell Oil Company. Treating wells with self-precipitating scale inhibitor. 4,357,248, Cl. 252-8.55B.

Berlin, Irwin J.: *See*—
Bardenstein, Albert, 4,356,948, Cl. 227-48.000.

Berman, Charles. Accessory for trousers and the like. 4,356,943, Cl. 224-222.000.

Bernard, Jean-Claude: *See*—
Aubry, Michel; Bernard, Jean-Claude; and Philipon, Paul, 4,357,210, Cl. 202-85.000.

Bernollin, Roland: *See*—
Labbe, Jacques; and Bernollin, Roland, 4,357,067, Cl. 339-177.00R.

Bernstein, Seymour: *See*—
Nair, Vijay G.; Joseph, Joseph P.; and Bernstein, Seymour, 4,357,326, Cl. 424-180.000.

Bertrams AG: *See*—
Kuhnlein, Hans; Kung, Hans R.; and Molnar, Georg, 4,357,206, Cl. 159-13.00A.

Betts, Robert E., to United States of America, Army. Burst-pressure test fixture for pressure vessels dynamic rocket motors. 4,356,720, Cl. 73-37.000.

Bezman, Susan A., to Chevron Research Company. Diisopropyl ether reversion and oligomerization in isopropanol production. 4,357,147, Cl. 44-56.000.

Bierhoff, Martinus P. M.; and Immink, Kornelis A., to U.S. Philips Corporation. Optical scanning apparatus with focussing system. 4,357,696, Cl. 369-45.000.

Billault, Georges: *See*—
Runavot, Yves; Billault, Georges; and Salvetat, Jacques, 4,357,459, Cl. 528-205.000.

Binet, Rejean; Cloutier, Joseph A. R.; Edmonds, Anthony C. F.; Holden, Harold W.; and McNicol, Melvin A., to C-I-L Inc. Explosive compositions based on time-stable colloidal dispersions. 4,357,184, Cl. 149-2.000.

Biot, Bernard; and Blanc, Charles; to Rhone-Poulenc-Textile. Method for introducing a yarn into a pneumatic yarn texturing means. 4,356,603, Cl. 28-255.000.

Black Clawson, Inc.: *See*—
Halgrimson, Darrell N.; Hanson, Donald H.; and King, Richard T., 4,356,850, Cl. 144-209.00R.

Black, David K.: *See*—
Gaylord, Edson C.; Black, David K.; Anderson, Russell L.; and Morton, Philip O., 4,356,870, Cl. 169-65.000.

Black & Decker Inc.: *See*—
Lessig, William R., III, 4,356,686, Cl. 56-295.000.

Blackburn, James C.; and Vanderwall, Jonathan, to United States of America, Army. Method and apparatus for reduction of modal noise in fiber optic systems. 4,357,713, Cl. 455-609.000.

Blais, Phillip D.: *See*—
Bartko, John; Felice, Patrick E.; and Blais, Phillip D., 4,357,417, Cl. 430-323.000.

Blakeway, Stanley R. Mixer. 4,357,109, Cl. 366-55.000.

Blanc, Charles: *See*—
Biot, Bernard; and Blanc, Charles, 4,356,603, Cl. 28-255.000.

Blasbalg, Morton L. Bird feeder. 4,356,793, Cl. 119-51.00R.

Bleckmann, Ingo. Electrical heating means for cookers or hot plates. 4,357,523, Cl. 219-464.000.

Blieden, Harry R.; and Yerkes, John W., to Atlantic Richfield Company. Luminescent solar collector. 4,357,486, Cl. 136-247.000.

Blincow, Donald W.; and Parks, Robert G., to General Nucleonics, Inc. Weight controller for canned food and the like. 4,356,874, Cl. 177-210.0FP.

Bloem, Herman: *See*—
de Grijs, Johan C.; and Bloem, Herman, 4,356,811, Cl. 126-433.000.

Blomfield, Peter J.: *See*—
Dudden, Christopher J.; and Blomfield, Peter J., 4,357,124, Cl. 408-130.000.

Bloomer, Frank A.: *See*—
Bentley, Stanley L.; and Bloomer, Frank A., 4,356,868, Cl. 169-26.000.

Blount, David H. Process for the production of alkali metal silicate-organic plastics. 4,357,429, Cl. 521-100.000.

Blount, David H. Process for the production of polyester silicate resinous products. 4,357,460, Cl. 528-271.000.

Blount, David H. Process for the production of polyester silicate resinous products. 4,357,463, Cl. 528-366.000.

Blumel, Harald; and Haag, Horst G., to Chemische Werke Huls Aktiengesellschaft. Shelf-stable ethylene-α-olefin (diene) elastomer powders comprising a release agent and a process for the production thereof. 4,357,439, Cl. 524-493.000.

Bock, Erick: *See*—
Karl, Rupert; Oexler, Rudolf; Schuller, Edmund; Braun, Erwin; Bock, Erick; and Schreyer, Franz, 4,356,691, Cl. 57-263.000.

Bock, Erwin; and Wetzels, Walter, to Schumag GmbH. Method and device for straightening elongated drawn round stock. 4,356,715, Cl. 72-98.000.

Boden, Richard M.; and Geiger, John H., Jr., to International Flavors & Fragrances Inc. Aliphatic C_{11} branched chain aldehydes and alcohols, process for preparing same and uses thereof in augmenting or enhancing the aroma of perfumes, colognes and/or perfumed articles. 4,357,247, Cl. 252-8.800.

Boden, Richard M., to International Flavors & Fragrances Inc. Use of 1-ethoxy-1-ethanol acetate for augmenting or enhancing the taste of toothpaste. 4,357,315, Cl. 424-49.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Use of 1-n-butoxy-1-ethanol acetate for augmenting or enhancing the taste of toothpaste. 4,357,316, Cl. 424-49.000.

Bodig, Bernd; and Jundt, Werner, to Robert Bosch GmbH. Low-speed compensated ignition system for an internal combustion engine. 4,356,808, Cl. 123-614.000.

Boeing Company, The: *See*—
Lambregts, Antonius A.; and Hansen, Rolf, 4,357,661, Cl. 364-430.000.
Robbins, Richard E.; and Simpson, Robert D., 4,357,663, Cl. 364-433.000.

Bogner, Karl-Heinz; and Mayer, Martin, to Robert Bosch GmbH. Starting mechanism for internal combustion engines. 4,356,735, Cl. 74-7.00A.

Bolick, Fred C., Jr., to Lanier Business Products, Inc. Tape cassette with housing providing selective removal of only one tape reel. 4,357,642, Cl. 360-132.000.

Boll, Manfred: *See*—
Sattlegger, Hans; Schnurrbusch, Karl; Boll, Manfred; and Friemann, Hans, 4,357,438, Cl. 524-490.000.

Bond, Helen I. Bolster type cushions for therapeutic use. 4,356,579, Cl. 5-431.000.

Bonnet, Christian: *See*—
de Sivry, Bruno J. M.; Carsac, Claude R.; and Bonnet, Christian, 4,357,517, Cl. 219-121.0ES.

Borg-Warner Corporation: *See*—
Krueger, Robert H., 4,357,236, Cl. 210-167.000.

Borgersen, Kristian: *See*—
Gundersen, George; Oien, Ewald; Eide, Ragnar; Wersland, Palmer; Borgersen, Kristian; Kloster, Paul, deceased; and Johnsen, Ketil, executor, 4,356,596, Cl. 17-58.000.

Bosch-Siemens Hausgerate GmbH: *See*—
Husslein, Julius; Rohrl, Franz; Nitzinger, Karl; and Gerl, Josef, 4,357,522, Cl. 219-400.000.

Bose, Phillip R., to Chevron Research Company. Method for removing suspended solids from a liquid. 4,357,244, Cl. 210-801.000.

Bosits, Gyula: *See*—
Takacs, Istvan; Felmeri, Jozsef; Kerey, Gyorgy; Rudolf, Peter; Banos, Zoltan; Vereczkey, Endre; and Bosits, Gyula, 4,357,306, Cl. 422-254.000.

Bostick, William D.; Denton, Mark S.; and Dinsmore, Stanley R., to United States of America, Energy. Bioluminescence methods for enzymatic determinations. 4,357,420, Cl. 435-8.000.

Bouko, Jean: *See*—
Salvat, Francois; Bouko, Jean; and Coquio, Claude, 4,357,612, Cl. 343-786.000.

Bouman, Johannes; and van der Linden, Peter J. M., to Tricentrol Benelux B.V. Hot water boiler. 4,356,794, Cl. 122-158.000.

Bourke, Robert P., to Lear Siegler, Inc. Support for seat pad. 4,357,005, Cl. 267-144.000.

Bourns, Inc.: *See*—
Cotton, Leslie L., 4,356,944, Cl. 225-5.000.

Bouteille, Daniel, to La Telemecanique Electrique. Ram locking device. 4,356,760, Cl. 91-445.000.

Bowman, Wayne A., to Eastman Kodak Company. Sulfo-containing adhesive compositions and self-processing photographic products containing same. 4,357,409, Cl. 430-207.000.

Boyle, John T. A.: *See*—
Archibald, John L.; and Boyle, John T. A., 4,357,333, Cl. 424-258.000.

Bracey, Robert G.: *See*—
Tenner, Richard B.; and Bracey, Robert G., 4,357,511, Cl. 200-314.000.

Brackett, Inc.: *See*—
Houseman, J. Daniel; and Fluke, Sydney C., 4,356,765, Cl. 101-228.000.

Braksmayer, Diza P., to FMC Corporation. Flame retardant polyphenylene ether resin compositions. 4,357,433, Cl. 524-139.000.

Brand, John R., to New Jersey Zinc Company, The. Titanium dioxide pigment treated to suppress yellowing in polymers. 4,357,170, Cl. 106-300.000.

Brandenstein, Manfred: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Dobhan, Herbert; and Horling, Peter, 4,357,056, Cl. 308-6.00C.

Brandes, Wilhelm: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,357,338, Cl. 424-269.000.

Branner-Jogensen, Sven; Schneider, Palle; and Eigtved, Peter, to Novo Industri A/S. Thermal destabilization of microbial rennet. 4,357,357, Cl. 426-36.000.

Braun, Erwin: *See*—
Karl, Rupert; Oexler, Rudolf; Schuller, Edmund; Braun, Erwin; Bock, Erick; and Schreyer, Franz, 4,356,691, Cl. 57-263.000.
Karl, Rupert; Mayer, Walter; Schuller, Edmund; and Braun, Erwin, 4,356,692, Cl. 57-263.000.

Braunweiler, Max, to Siemens Aktiengesellschaft. Dosing device for gas chromatography. 4,356,733, Cl. 73-863.110.

Breining, Frank E., to Airmaster Fan Company. Swag kit for ceiling mounted fans. 4,357,506, Cl. 200-52.00R.

Brezniak, Diane V.: *See*—
White, Mary A.; and Brezniak, Diane V., 4,357,443, Cl. 524-860.000.

Bridges, Ronald P. Power driven group operated circuit disconnect apparatus for overhead electric power line. 4,357,505, Cl. 200-48.0KB.

Bristol-Myers Company: *See*—
Fleming, James S., Jr.; and Buyniski, Joseph P., 4,357,330, Cl. 424-232.000.

British Petroleum Company Limited, The: *See*—
Barlow, Michael T.; and Stewart, David G., 4,357,480, Cl. 568-902.000.

Brodeur, Rene H.; and Terlecky, Boris S., to Railgon Company. Corner connector for open top rail cars. 4,356,776, Cl. 105-406.00R.

Broghammer, Rudolf; and Kaser, Franz, to Fabrik fur Technische Laufwerke und Apparate Kundo Kieninger & Obergfell. Bell-striking clock. 4,357,692, Cl. 368-75.000.

Brooks, Wahner E. Liquid container leakage detection method and system. 4,357,113, Cl. 374-4.000.

Brooks, William C., to RCA Corporation. Method for electroforming a replica on a record matrix. 4,357,216, Cl. 204-5.000.

Brotzmann, Karl: *See*—
von Bogdandy, Ludwig; and Brotzmann, Karl, 4,357,160, Cl. 75-60.000.

Brown, Carole E.; Ball, Dean M.; Killip, Graham R.; and Olivier, James P. Continuous volume measuring system. 4,356,727, Cl. 73-243.000.

Brown, Harry W., to Arinc Research Corporation. Shaft coupling. 4,357,137, Cl. 464-75.000.

Brown, Hugh B., to Ampex Corporation. Frequency multiplexed joint transform correlator system. 4,357,676, Cl. 364-822.000.

Brown, Warner K.; and Kirby, Robert L., to Clark Equipment Company. Control rod handle. 4,356,739, Cl. 74-548.000.

Brown, William R., to FMC Corporation. Linear drive unit for vibratory conveyor. 4,356,911, Cl. 198-766.000.

Bruce, William H., Jr.: *See*—
Caudill, Allison H.; and Bruce, William H., Jr., 4,357,093, Cl. 355-3.00R.

Bruderhaus Maschinen GmbH: *See*—
Hornung, Hans; and Schneider, Wolfgang, 4,356,745, Cl. 83-341.000.

Bruel, Per V. Acoustic test box. 4,357,499, Cl. 179-175.10A.

Buchel, Karl H.: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,357,338, Cl. 424-269.000.

Buchholz, Matthew: *See*—
Chen, Gilbert K.; Nyberg, Paul M.; and Buchholz, Matthew, 4,356,611, Cl. 29-157.00R.

Buchler Instruments, Inc.: *See*—
November, Dan; and Adler, Robert, 4,356,909, Cl. 198-472.000.

Buckingham, Gerald: *See*—
Ward, Elizabeth M.; and Buckingham, Gerald, 4,356,791, Cl. 119-14.430.

Buckwalter, Mervin R.; and Ray, Leonard N., Jr., to Armstrong World Industries, Inc. Through-color printing. 4,357,189, Cl. 156-230.000.

Buechler, Lester W. Engraving apparatus and method. 4,357,633, Cl. 358-299.000.

Buethe, Ingolf: *See*—
Lehner, August; Gimpel, Juergen; Buethe, Ingolf; Hartmann, Heinrich; and Schenck, Hans-Uwe, 4,357,221, Cl. 204-181.00R.

Buffalo Medical Specialties Mfg., Inc.: *See*—
Loretz, Thomas J., 4,357,105, Cl. 356-40.000.

Buffington, Chester G.; Fang, Herbert H.; Friedfeld, Barry A.; Kaniecki, Thaddeus J.; Kennedy, John W.; Liu, Chong-tan; Sternberg, Morton; Feng, Henry H.; Chen, Paul Y.; Mukaddam, Waheed; and Narasimhan, Pattamadai E., to Stauffer Chemical Company. Process for cleaning the interiors of vessels. 4,357,175, Cl. 134-10.000.

Buinicky, Ernest P.: *See*—
Estes, John H.; and Buinicky, Ernest P., 4,357,231, Cl. 208-11.00R.

Bullard, Edward M.; and Smith, Gregory M., to Mobil Oil Corporation. Laminar thermoplastic film constructions. 4,357,191, Cl. 156-244.140.

Bu'Lock, John D., to Sim-Chem Limited. Process for the continuous production of fermentation alcohol. 4,357,424, Cl. 435-162.000.

Bunce, Roger A.; Kennedy, John H.; Kricka, Larry J.; and Whitehead, Thomas P., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the. Apparatus for testing a liquid sample. 4,356,722, Cl. 73-53.000.

Burghoff, Karl; Supper, Ottmar; and Trube, Hans, to Max Kammerer GmbH; and Daimler-Benz Aktiengesellschaft. Device for the rotating actuation of linearly actuated control elements. 4,356,737, Cl. 74-501.00R.

Burke, Thomas P., to RCA Corporation. Television display system employing permeable correctors for a deflection yoke. 4,357,556, Cl. 313-440.000.

Burnett, Archibald L.: *See*—
Miller, John C.; and Burnett, Archibald L., 4,357,291, Cl. 264-176.00R.

Burnham, Benjamin K.: *See*—
Heininger, Richard T.; and Burnham, Benjamin K., 4,356,593, Cl. 16-251.000.

Burroughs Corporation: *See*—
Chadra, David P., 4,357,681, Cl. 364-900.000.
Nelson, Edward L., 4,356,613, Cl. 29-407.000.

Burroughs Wellcome Co.: *See*—
Thorogood, Peter B., 4,357,340, Cl. 424-273.00R.

Burzynski, Dennis J.: *See*—
Go, Santos W.; and Burzynski, Dennis J., 4,357,461, Cl. 524-724.000.

Bush, Howard B.: *See*—
Sheeler, Scott O.; Bush, Howard B.; and Kiproff, Peter N., 4,357,155, Cl. 65-10.100.

Butler Manufacturing Company: *See*—
Korff William W., 4,357,665, Cl. 364-492.000.

Butler, Marlow D., to Palmguard, Inc. Palm-positioning and system-actuating mechanism. 4,357,597, Cl. 340-146.30E.

Butler, Michael B. N.; Jacobs, Walter W.; and Grant, Peter M., to Racal-Mesl Limited. Apparatus for regenerating signals within a frequency band. 4,357,709, Cl. 455-20.000.

Buttner, Hans H. Machine for tying packages or the like. 4,356,685, Cl. 53-588.000.

Buttrey, Kenneth E., to United States of America, Energy. Fire suppressing apparatus. 4,356,869, Cl. 169-49.000.

Buyniski, Joseph P.: *See*—
Fleming, James S., Jr.; and Buyniski, Joseph P., 4,357,330, Cl. 424-232.000.

Bykov, Vladimir I.: *See*—
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.

Bytzek, Max: *See*—
Heinrich, Wolfgang; Bytzek, Max; Hammer, Klaus-Dieter; and Schroder, Martin, 4,357,371, Cl. 427-238.000.

Bzdula, Joseph A.: *See*—
Sibley, Howard W.; and Bzdula, Joseph A., 4,357,230, Cl. 208-11.0LE.

C-I-L Inc.: *See*—
Binet, Rejean; Cloutier, Joseph A. R.; Edmonds, Anthony C. F.; Holden, Harold W.; and McNicol, Melvin A., 4,357,184, Cl. 149-2.000.

C.N.R., Inc.: *See*—
Chase, David; and Spencer, Richard, 4,357,702, Cl. 371-1.000.

Cade, Paul E., to International Business Machines Corporation. Electrostatically deformographic switches. 4,356,730, Cl. 73-517.00R.

Cairns, Thomas M.; and Connors, David G., to Ford Motor Company. Printed circuit board edge terminal. 4,357,066, Cl. 339-176.0MP.

Calderwood, Mitchell C. Aerostat and method of operation. 4,356,661, Cl. 46-74.00R.

Calgon Corporation: *See*—
Yorke, Monica A., 4,357,207, Cl. 159-47.0WL.

California R & D Center: *See*—
Knighton, Mark S.; Fuller, Charles H.; Sims, Anson; Howden, Ashley G.; Kingsbury, L. C. James; and Jones, Lawrence T., 4,357,488, Cl. 179-1.0SC.

Calvert, Murray B. Pentagonal game equipment. 4,357,018, Cl. 273-261.000.

Calvert, Rodney K., to Mead Corporation, The. Machine and method for forming and applying carrying straps to article cartons. 4,357,186, Cl. 156-73.100.

Cameron Iron Works, Inc.: *See*—
Becker, James R.; and Raymond, Edward L., 4,356,612, Cl. 29-157.10R.

Cameron-Johnson, Alan; and Miles, Michael J., to Sauer United Kingdom Limited. Fluid pressure machines. 4,356,761, Cl. 91-490.000.

Campbell, Eugene; and Whittemore, Terrance R. Automatic microphone mixing apparatus. 4,357,492, Cl. 179-1.0AT.

Campbell, Roscoe, to Harris Corporation. Creel assembly. 4,357,008, Cl. 271-315.000.

Canada, Her Majesty the Queen in right of: *See*—
Arnold, Sara J.; and Foster, Kenneth D., 4,357,309, Cl. 423-486.000.

Canada Wire and Cable Limited: *See*—
Yamada, Minoru; and Ito, Rokuzo, 4,356,846, Cl. 140-115.000.

Canadian Patents & Development Limited: *See*—
Inculet, Ion I.; and Murata, Yuji, 4,357,234, Cl. 209-127.00B.

Canarelli, Filippe: *See*—
Massoni, Francois; Canarelli, Filippe; and Fellrath, Francoise, 4,357,558, Cl. 315-83.000.

Canniff, Ronald J., to Bell Telephone Laboratories, Incorporated. Digital concentrator terminal synchronization. 4,357,701, Cl. 370-100.000.

Canon Kabushiki Kaisha: *See*—
Ikawa, Kazuo; Hirohata, Michio; Matsuda, Mutsuhide; and Mashimo, Yukio, 4,357,087, Cl. 354-33.000.
Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,357,085, Cl. 354-25.000.

Cardenas-Franco, Luis; and Sanches-Galindo, Gustavo A., to Investigacion Fic Fideicomiso. Electronic gob distributor for glassware forming machines and the like. 4,357,157, Cl. 65-164.000.

Carey, Norman H.: *See*—
Emtage, John S.; and Carey, Norman H., 4,357,421, Cl. 435-68.000.

Cargioli, Joseph D.: *See*—
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,357,395, Cl. 428-607.000.

Carl, Robert J.: *See*—
Wear, Charles W.; and Carl, Robert J., 4,356,774, Cl. 105-199.00C.

Carlsson, Nils-Eric: *See*—
Knudsen, Ib H.; Lindstrom, Bror A. O.; and Carlsson, Nils-Eric, 4,357,241, Cl. 210-708.000.

Carmody, Michael A., to Baker International Corporation. Temporary lock-open tool for subterranean well valve. 4,356,867, Cl. 166-373.000.

Carney, Robert L.; and Lui, Alfred S. T., to Zoecon Corporation. Insect pheromone. 4,357,474, Cl. 556-482.000.

Carr, Neil; Gray, George W.; and Kelly, Stephen M., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal compounds containing an alicyclic ring and exhibiting a low dielectric anisotropy and liquid crystal materials and devices incorporating such compounds. 4,357,078, Cl. 350-350.00R.

Carr, Robert B.; and Erikson, Richard A., to Alfa-Laval, Inc. Anti-drag cap for basket centrifuge. 4,356,960, Cl. 233-46.000.

Carrier Corporation: *See*—
Sibley, Howard W.; and Bzdula, Joseph A., 4,357,230, Cl. 208-11.0LE.

Carroll, James J.: *See*—
Leach, John G.; and Carroll, James J., 4,357,588, Cl. 337-160.000.

Carsac, Claude R.: *See*—
de Sivry, Bruno J. M.; Carsac, Claude R.; and Bonnet, Christian, 4,357,517, Cl. 219-121.0ES.

Carter, Andrew C.: *See*—
Goodfellow, Robert C.; and Carter, Andrew C., 4,357,072, Cl. 350-96.200.

Carter Equipment Co., Inc.: *See*—
Carter, William D., 4,356,945, Cl. 226-6.000.

Carter, William D., to Carter Equipment Co., Inc. Motion picture printing machine having interchangeable film receiving units. 4,356,945, Cl. 226-6.000.

Carver, Robert G., to Creative Cartons of Ashland, Inc. Collapsible stereoscopic viewer and filmstrip holder therefor. 4,357,073, Cl. 350-140.000.

Case, Robert F.: *See*—
Roes, John B.; Kelly, Guy M.; Case, Robert F.; and Deming, Chandler R., 4,357,530, Cl. 235-384.000.

Cassaday, Michael M.; Diebler, Herman G.; Svenjak, Dario; and Uffenheimer, Kenneth F., to Technicon Instruments Corp. Reaction cuvette. 4,357,301, Cl. 422-64.000.

Cassella Aktiengesellschaft: *See*—
Engelhardt, Friedrich; Riegel, Ulrich; Hille, Martin; and Wittkus, Heinz, 4,357,245, Cl. 252-8.50C.

Caterpillar Tractor Co.: *See*—
Shuler, Lucien B.; and Spivey, William J., Jr., 4,356,738, Cl. 74-470.000.

Caudill, Allison H.; and Bruce, William H., Jr., to International Business Machines Corporation. Photoconductor tensioning device. 4,357,093, Cl. 355-3.00R.

CBS Inc.: *See*—
Davis, Lanny C.; and Anderson, Roy A., 4,356,755, Cl. 84-343.000.

Cellone, Luigi, to Minnesota Mining and Manufacturing Company. Photographic elements with improved surface characteristics. 4,357,418, Cl. 430-539.000.

Censor Patent- und Versuchs-Anstalt: *See*—
Mayer, Herbert E.; and Lobach, Ernst W., 4,357,100, Cl. 355-62.000.

Centrum Konstrukcyjno-Technologiczne Maszyn Gorniczynch "KOMAG": *See*—
Pilarski, Klemens; Ulczok, Stefan; Walkiewicz, Stanislaw; and Rudnicki, Wincenty, 4,357,052, Cl. 299-42.000.

Chadra, David P., to Burroughs Corporation. Line turn circuit for data link. 4,357,681, Cl. 364-900.000.

Chadshay, Roman, to Combustion Engineering, Inc. Nozzle tip for pulverized coal burner. 4,356,975, Cl. 239-419.500.

Chamberlain, John, to United Technologies Corporation. Staged combustor having aerodynamically separated combustion zones. 4,356,698, Cl. 60-733.000.

Chambers, Charles W., Jr., to Tellabs, Inc. Impedance canceller circuit. 4,357,494, Cl. 179-16.00F.

Champion International Corporation: *See*—
Benham, Albert A., 4,356,950, Cl. 229-11.000.
Rekow, Vernon C., 4,356,952, Cl. 229-34.00R.
Rekow, Vernon C., 4,356,953, Cl. 229-34.00R.

Chan, Catherine T.; and Gravallese, Debra A., to Baxter Travenol Laboratories, Inc. Method and composition for reducing the nonspecific binding of radioiodinated protein hormones. 4,357,310, Cl. 424-1.000.

Chandler Associates, Inc.: *See*—
Chandler, Charles R., 4,357,242, Cl. 210-712.000.

Chandler, Charles R., to Chandler Associates, Inc. Water purification method and apparatus. 4,357,242, Cl. 210-712.000.

Chase, David; and Spencer, Richard, to C.N.R., Inc. Error correcting apparatus. 4,357,702, Cl. 371-1.000.

Chason, Kenneth R., to GTI Corporation. Welding method and apparatus. 4,357,514, Cl. 219-56.100.

Che, Stanley C., to Occidental Research Corporation. Recovery of hydrocarbon values from pyrolytic vapors. 4,357,228, Cl. 208-8.00R.

Chemical Sciences, Inc.: *See*—
Kapiloff, Anita G.; and Hatch, Randolph T., 4,357,254, Cl. 252-181.000.

Chemische Werke Huls Aktiengesellschaft: *See*—
Blumel, Harald; and Haag, Horst G., 4,357,439, Cl. 524-493.000.

Chemisciences Inc.: *See*—
Enomoto, Makoto; and Doke, Nobumichi, 4,357,349, Cl. 424-302.000.

Chen, Gilbert K.; Nyberg, Paul M.; and Buchholz, Matthew, to Koch Engineering Company, Inc. Method of fabricating vapor-liquid contact grid. 4,356,611, Cl. 29-157.00R.

Chen, Paul Y.: *See*—
Buffington, Chester G.; Fang, Herbert H.; Friedfeld, Barry A.; Kaniecki, Thaddeus J.; Kennedy, John W.; Liu, Chong-tan; Sternberg, Morton; Feng, Henry H.; Chen, Paul Y.; Mukaddam, Waheed; and Narasimhan, Pattamadai E., 4,357,175, Cl. 134-10.000.

Cheradame, Herve M.: *See*—
Andre, Jean D.; Killis, Andreas; Le Nest, Jean-Francois; and Cheradame, Herve M., 4,357,401, Cl. 429-192.000.

Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N. Method for processing wastes resulting from production of phosphorus, namely, slime and off-gases, with utilization of the resultant products. 4,357,161, Cl. 75-153.000.

Chervyakov, Evgeny N.: *See*—
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Obidin, Valery Y.; Pogorelova, Iraida S.; Ogy, Grigory E.; Vainshtein, Leonid A.; and Pann, Lazar A., 4,356,759, Cl. 91-31.000.

Chevron Research Company: *See*—
Bezman, Susan A., 4,357,147, Cl. 44-56.000.
Bose, Phillip R., 4,357,244, Cl. 210-801.000.
Knake, Raymond P., 4,356,934, Cl. 221-96.000.

Chiang, Robert L., to W. R. Grace & Co. Catalytic cracking catalyst. 4,357,265, Cl. 252-455.00Z.

Chicago Roller Skate Company: *See*—
Hsieh, Even, 4,357,028, Cl. 280-11.280.

Chien, James C. W.: *See*—
Farris, Richard J., 4,357,041, Cl. 293-136.000.

Children's Hospital Medical Center, The: *See*—
Hsieh, Dean S. T.; and Langer, Robert S., Jr., 4,357,312, Cl. 424-15.000.

Chin, Hsiao-Ling M.; and Pallos, Ferenc M., to Stauffer Chemical Company. N-Haloalkyl thiobenzanilides and their use as fungicides. 4,357,346, Cl. 424-298.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See*—
Szejtli, Jozsef; Zsadon, Bela; Fenyvesi, Eva; Horvath, nee Otta; Klara; and Tudos, Ferenc, 4,357,468, Cl. 536-56.000.

Chivas Products, Limited: *See*—
Moore, Ronald D., 4,356,592, Cl. 16-125.000.

Chivers, Carl E.: *See*—
Zucker, Jerry; Chivers, Carl E.; and Jefferson, Donald E., 4,357,436, Cl. 524-448.000.

Christensen, Burton G.; and Ratcliffe, Ronald W., to Merck & Co., Inc. 1-Azabicyclo[3.2.0]heptan-3,7-dione-2-carboxylic acid. 4,357,342, Cl. 424-274.000.

Christensen, Dean L.: *See*—
Kahle, Henry; Menkes, Jeffrey R.; and Christensen, Dean L., 4,356,918, Cl. 206-444.000.

Christensen, Inc.: *See*—
Hyland, Craig R., 4,356,872, Cl. 175-58.000.

Chrysler Corporation: *See*—
Graham, Kenneth A., 4,356,801, Cl. 123-337.000.

Chu, Chin-Chiun, to Mobil Oil Corporation. Alkaline earth metal modified zeolite catalysts. 4,357,264, Cl. 252-455.00Z.

Chu, Muren: *See*—
Wang, Cheng-Chi; and Chu, Muren, 4,357,620, Cl. 357-16.000.

Chung, David H. Encoding and decoding digital information utilizing time intervals between pulses. 4,357,634, Cl. 360-40.000.

Chung, Hun Hwei. Centering device. 4,356,635, Cl. 33-185.00R.

Chylewski, Christoph; Jan, Gerald; Kurzen, Roland; Meier, Max; and Schellenberg, Matthias, to Ciba-Geigy AG. Use of tertiary phosphines in photographic silver dye bleach materials. 4,357,280, Cl. 260-465.00R.

Ciba-Geigy AG: *See*—
Chylewski, Christoph; Jan, Gerald; Kurzen, Roland; Meier, Max; and Schellenberg, Matthias, 4,357,280, Cl. 260-465.00R.

Ciba-Geigy Corporation: *See*—
Batzer, Hans; and Sinnreich, Joel, 4,357,453, Cl. 526-271.000.
Gloor, Bernhard, 4,357,159, Cl. 71-90.000.

Ciba Geigy Corporation, N.Y.: *See*—
Reinchr, Dieter; Hugelin, Bernard; and Troxler, Eduard, 4,357,476, Cl. 564-509.000.

Clairmont, Delore M.: *See—*
Oas, David C.; and Clairmont, Delore M., 4,357,288, Cl. 264-40.600.
Clarion Co., Ltd.: *See—*
Ariga, Shoji; and Suzuki, Kazuo, 4,356,864, Cl. 165-80.00B.
Minagawa, Shoichi; Sakai, Takamasa; Okamoto, Takeshi; and Niimi, Morihiro, 4,357,553, Cl. 310-313.00B.
Taketomi, Chiaki; Miura, Tadao; Akiba, Keiji; and Hirose, Koji, 4,357,636, Cl. 360-62.000.
Clark, David P., to Eaton Corporation. Spring retainer-valve selector. 4,356,799, Cl. 123-90.650.
Clark Equipment Company: *See—*
Bartow, Richard J., 4,356,891, Cl. 187-9.00E.
Brown, Warner K.; and Kirby, Robert L., 4,356,739, Cl. 74-548.000.
Clark, Gloria A.: *See—*
Cooper, George W.; and Clark, Gloria A., 4,356,927, Cl. 220-90.200.
Clark, Philip H. Obstetrics bed. 4,356,578, Cl. 5-66.000.
Clark, W. Kenneth: *See—*
Atanasoff, John V.; Clark, W. Kenneth; Henderson, David; and Wreghitt, Kenneth W., 4,356,770, Cl. 102-384.000.
Clarke, William A. Take-apart doll. 4,356,659, Cl. 46-22.000.
Cleaveland, Charles M.; and Kowalik, Peter M., to Cleaveland/Price Enterprises, Inc. Bearing and journal means for the rotatable crank-arm assembly of a disconnecting switch. 4,357,504, Cl. 200-48.00R.
Cleaveland/Price Enterprises, Inc.: *See—*
Cleaveland, Charles M.; and Kowalik, Peter M., 4,357,504, Cl. 200-48.00R.
Kowalik, Peter M., 4,357,503, Cl. 200-48.00A.
Cleck, Stephen M.: *See—*
Heck, Roland H.; Cleck, Stephen M.; Shih, Stuart S.; and Wilson, Robert C., 4,357,263, Cl. 252-439.000.
Clements, Kenneth P., to Metallurgical Research, Inc. Cash flow monitoring system. 4,357,605, Cl. 340-825.140.
Clerc, Alain M., to Faiveley S.A. Trolley pole mechanism for use on electrically-powered road vehicles. 4,357,501, Cl. 191-83.000.
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Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., 4,357,359, Cl. 426-103.000.
Cloud Corporation: *See—*
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., 4,357,359, Cl. 426-103.000.
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., to Cloud Corporation. Method and apparatus for manufacture of candy. 4,357,359, Cl. 426-103.000.
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Binet, Rejean; Cloutier, Joseph A. R.; Edmonds, Anthony C. F.; Holden, Harold W.; and McNicol, Melvin A., 4,357,184, Cl. 149-2.000.
Clune, Elmer F.: *See—*
Clune, Robert H., 4,356,875, Cl. 180-13.000.
Clune, Robert H., to Clune, Elmer F. Portable motorized golf cart. 4,356,875, Cl. 180-13.000.
Coal Industry (Patents) Limited: *See—*
Kellet, William H.; and Mills, Peter S., 4,357,167, Cl. 106-97.000.
Coca Cola Company: *See—*
Sedam, Jason K., 4,357,284, Cl. 261-121.00R.
Coche, Andre: *See—*
Tschirren, Jean D.; Widmer, Gilbert C.; Pellaux, Jean-Paul; Coche, Andre; and Samsel, Marcel R., 4,357,106, Cl. 356-44.000.
Coen Company, Inc.: *See—*
Vosper, Ralph R.; and Harthun, Norman E., 4,356,970, Cl. 239-8.000.
Cohen, Abraham B.; and Gervay, Joseph E., to Du Pont de Nemours, E. I., and Company. Dry-developing photosensitive dry film resist. 4,357,413, Cl. 430-253.000.
Colgate Palmolive Company: *See—*
Harvey, Kenneth; and Connors, Stephen T., 4,357,313, Cl. 424-49.000.
Weyn, Hendrik F.; Baines, Eric; and Harvey, Kenneth, 4,357,317, Cl. 424-52.000.
Collin, Gerd: *See—*
Grigoleit, Georg; Matern, Kurt; Kohler, Helmut; and Collin, Gerd, 4,357,472, Cl. 549-49.000.
Collonia, Harald: *See—*
Kern, Eckhart; Collonia, Harald; and Groh, Herbert-Hans, 4,356,802, Cl. 123-339.000.
Colt Industries Operating Corp.: *See—*
Manning, William O., 4,357,283, Cl. 261-23.00A.
Comberg, Albert; and Panstruga, Karl H., to U.S. Philips Corporation. Method of blackening steel components for cathode ray tubes. 4,357,367, Cl. 427-64.000.
Combined Logic Company: *See—*
Greenberg, George A., 4,357,624, Cl. 358-22.000.
Combustion Engineering, Inc.: *See—*
Anderson, Paul C.; and Sullivan, Robert P., 4,356,847, Cl. 141-311.00R.
Chadshay, Roman, 4,356,975, Cl. 239-419.500.
Compagnie Francaise des Petroles: *See—*
de Sivry, Bruno J. M.; Carsac, Claude R.; and Bonnet, Christian, 4,357,517, Cl. 219-121.0ES.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Le Grand, Yves; and Migeon, Rene, 4,357,545, Cl. 307-64.000.
Compur-Electronic GmbH: *See—*
Nicklaus, Eberhard; Warncke, Heinz; Pross, Wilhelm; and Hartl, Wolfgang, 4,357,300, Cl. 422-62.000.
Concast AG: *See—*
Gloor, Hans, 4,356,862, Cl. 164-491.000.
Connolly, James P. Cylindrical woven fabric tank. 4,356,933, Cl. 220-401.000.
Connors, David G.: *See—*
Cairns, Thomas M.; and Connors, David G., 4,357,066, Cl. 339-176.0MP.
Connors, Stephen T.: *See—*
Harvey, Kenneth; and Connors, Stephen T., 4,357,313, Cl. 424-49.000.
Construction Products Research, Inc.: *See—*
Babcock, Warner K., 4,357,166, Cl. 106-89.000.
Consumers Glass Company Limited: *See—*
Mancini, Derek V., 4,356,682, Cl. 53-443.000.
Continental Group, Inc., The: *See—*
Walter, John, 4,356,924, Cl. 215-237.000.
Contraves AG: *See—*
Rosli, Walter, 4,357,107, Cl. 356-147.000.
Control Concepts Inc.: *See—*
Lilienthal, Clarence D., 4,357,645, Cl. 361-93.000.
Control Data Corporation: *See—*
Van Brunt, Nicholas P., 4,357,703, Cl. 371-15.000.
Conzelmann, Gerhard: *See—*
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,356,604, Cl. 28-255.000.
Cooper, George W.; and Clark, Gloria A. Pop-up straw for beverage cans. 4,356,927, Cl. 220-90.200.
Cooper, John H., to Armstrong World Industries, Inc. Apparatus for applying latex coating to moving fabric. 4,357,373, Cl. 427-358.000.
Cope, Leonard D.: *See—*
Baer, Ralph H.; Cope, Leonard D.; Holt, Oliver D.; and Morrison, Howard J., 4,357,014, Cl. 273-85.00G.
Coquio, Claude: *See—*
Salvat, Francois; Bouko, Jean; and Coquio, Claude, 4,357,612, Cl. 343-786.000.
Cord, Paul P.; and Guy, Louis R., to Societe Nationale des Poudres et Explosifs. Delay fuse with a slow rate of combustion and a small diameter. 4,356,768, Cl. 102-275.900.
Corda, Giuseppe: *See—*
Daniele, Vincenzo; Corda, Giuseppe; Magrucci, Aldo; and Torelli, Guido, 4,357,685, Cl. 365-189.000.
Cornell, Paul A.: *See—*
Cornell, Paul V.; and Cornell, Paul A., 4,357,068, Cl. 339-266.00R.
Cornell, Paul V.; and Cornell, Paul A., to Pan Electric Corporation. Cable clamping device. 4,357,068, Cl. 339-266.00R.
Coscia, Charles M., to D. L. Auld Company, The. Decorative emblems and method for making same. 4,356,617, Cl. 29-527.400.
Cotton, Leslie L., to Bourns, Inc. Method and apparatus for breaking prescored ceramic substrate plates. 4,356,944, Cl. 225-5.000.
Coulmance, Jean-Pierre R.; and Ricouard, Jean-Pierre, to U.S. Philips Corporation. Light projector equipped with a low-voltage incandescent lamp and incorporating a relay. 4,357,652, Cl. 362-276.000.
Coverstone, Don A.; and Harris, Larry G., to Lyall Electric, Inc. Fabrication techniques for tubular sheathed heaters. 4,356,624, Cl. 29-611.000.
Cox, James L.: *See—*
Vernon, Ruth P.; and Cox, James L., 4,356,570, Cl. 2-16.000.
Cox, Roger B.; and Steer, David C., to Lever Brothers Company. Microbial heteropolysaccharide. 4,357,423, Cl. 435-101.000.
CPC International Inc.: *See—*
Edwards, Larry W., 4,357,172, Cl. 127-60.000.
Crawford, David J.: *See—*
Benjamin, Charles E.; and Crawford, David J., 4,357,540, Cl. 250-491.100.
Creative Cartons of Ashland, Inc.: *See—*
Carver, Robert G., 4,357,073, Cl. 350-140.000.
Creusot-Loire: *See—*
Leveque, Robert, 4,357,182, Cl. 148-6.350.
Crosby, John B., to Beckman Instruments, Inc. Electro-mechanical package of visual display and related circuitry. 4,357,061, Cl. 339-17.00C.
Cubic Western Data: *See—*
Roes, John B.; Kelly, Guy M.; Case, Robert F.; and Deming, Chandler R., 4,357,530, Cl. 235-384.000.
Cuccolo, Sergio: *See—*
Sachetto, Jean-Pierre; Michel, Jean-Pierre; Cuccolo, Sergio; and Regnault, Alain, 4,357,467, Cl. 536-56.000.
Custom Plastics, Inc.: *See—*
Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,357,000, Cl. 256-26.000.
Cwienkala, Gerry A.: *See—*
McKenna, William F.; and Cwienkala, Gerry A., 4,356,638, Cl. 33-333.000.
D. L. Auld Company, The: *See—*
Coscia, Charles M., 4,356,617, Cl. 29-527.400.
Daaboul, Fouad; and Le Van, Tiu, to Northern Telecom Limited. Method of and apparatus for detecting speech in a voice channel signal. 4,357,491, Cl. 179-1.0SP.
Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Hamamura, Tamotu; Inoue, Nobuji; and Sato, Kazuo, 4,357,441, Cl. 524-591.000.
Daicel Chemical Industries, Ltd.: *See—*
Kubo, Masayoshi; and Inoue, Kimio, 4,357,462, Cl. 528-357.000.

Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,357,323, Cl. 424-180.000.
Daimler-Benz Aktiengesellschaft: *See*—
Burghoff, Karl; Supper, Ottmar; and Trube, Hans, 4,356,737, Cl. 74-501.00R.
Schopf, Hans-Joachim; and Lug, Dietmar, 4,356,741, Cl. 74-595.000.
d'Alayer de Costemore d'Arc, Stephane M., to Staar S.A. Method and apparatus for correcting automatically the designation of type of tape carrier. 4,357,643, Cl. 360-137.000.
Dale, John R.; and Dickinson, Malcolm I., to United States of America, Navy. Low cost sonobuoy. 4,357,688, Cl. 367-4.000.
Dali, Carmelo: *See*—
Hon, Edward H.; and Dali, Carmelo, 4,356,610, Cl. 29-157.00R.
Dalmandi Allami Gazdasag: *See*—
Ivancsics, Jozsef, 4,356,734, Cl. 73-864.310.
Dalton, Jeffrey L.: *See*—
Landi, Vincent R.; and Dalton, Jeffrey L., 4,357,269, Cl. 523-206.000.
Daniele, Vincenzo; Corda, Giuseppe; Magrucci, Aldo; and Torelli, Guido, to SGS-ATES Componenti Elettronici S.p.A. Method of programming an electrically alterable nonvolatile memory. 4,357,685, Cl. 365-189.000.
Daskalakis, Olga: *See*—
Gindler, E. Melvin; and Daskalakis, Olga, 4,357,144, Cl. 23-230.00B.
Dauby, Jacques F.: *See*—
Hanotier, Jacques D.; and Dauby, Jacques F., 4,357,475, Cl. 562-414.000.
Daude, Otto; and Peckmann, Heinz, to Alcan Aluminiumwerke GmbH. External housing for an exhaust muffler for internal combustion engines. 4,356,886, Cl. 181-250.000.
David, Ray T. Cable slitting tool. 4,356,630, Cl. 30-90.400.
Davinson, Ian, to Rolls-Royce Limited. Monitoring distance variations. 4,357,104, Cl. 356-4.000.
Davis, Donald R.: *See*—
White, James W.; Ruwe, Victor W.; and Davis, Donald R., 4,356,721, Cl. 73-40.700.
Davis, Gordon T., to International Business Machines Corporation. Programmable sequential logic array mechanism. 4,357,678, Cl. 364-900.000.
Davis, James W.: *See*—
Wiley, Robert A.; Williams, Theodore F.; and Davis, James W., 4,357,613, Cl. 346-75.000.
Davis, Lanny C.; and Anderson, Roy A., to CBS Inc. Organ stop control panel. 4,356,755, Cl. 84-343.000.
Davis, Larry R.: *See*—
Phillips, Curtis D.; Davis, Larry R.; and Phillips, Kenneth E., 4,357,140, Cl. 493-307.000.
Davis, Robert: *See*—
Porter, James H.; Davis, Robert; and Zakaria, Jehangir, 4,356,779, Cl. 110-245.000.
Davis, William L. Beater. 4,357,112, Cl. 366-279.000.
DBM Industries Limited: *See*—
Perrella, Guido; and Thompson, William E., 4,356,858, Cl. 164-154.000.
De Lorean Manufacturing Company: *See*—
Hine, Gordon; and Mathis, Robert D., 4,356,645, Cl. 37-281.000.
Deacon Machinery, Inc.: *See*—
Oas, David C.; and Clairmont, Delore M., 4,357,288, Cl. 264-40.600.
Dean, Raymond H.: *See*—
Edwards, Douglas F.; and Dean, Raymond H., 4,356,963, Cl. 236-49.000.
Dearman, Timothy C. Apparatus and methods for use in welding. 4,356,615, Cl. 29-525.000.
de Grijs, Johan C.; and Bloem, Herman, to U.S. Philips Corporation. Solar collector. 4,356,811, Cl. 126-433.000.
Delany, Edward B.: *See*—
Schwartz, Arnold; and Delany, Edward B., 4,357,668, Cl. 364-497.000.
Dello, Christy J. Chambered-core motorcycle-exhaust apparatus. 4,356,885, Cl. 181-227.000.
Delury, Dale E., to Pertec Computer Corporation. Digital phase lock loop for flexible disk data recovery system. 4,357,707, Cl. 375-119.000.
Demi, Roy C., to Robertshaw Controls Company. Fluid flow sensing switch device—method of making. 4,356,625, Cl. 29-622.000.
Deming, Andrew F.; and Todd, Ronald C., to Alliance Manufacturing Company, The. Closure operator control. 4,357,564, Cl. 318-280.000.
Deming, Chandler R.: *See*—
Roes, John B.; Kelly, Guy M.; Case, Robert F.; and Deming, Chandler R., 4,357,530, Cl. 235-384.000.
Demoute, Jean-Pierre: *See*—
Martel, Jacques; Tessier, Jean; Teche, Andre; and Demoute, Jean-Pierre, 4,357,335, Cl. 424-263.000.
Dennison Manufacturing Company: *See*—
Woo, Way D.; and Steddom, William, 4,357,560, Cl. 318-7.000.
Denton, Mark S.: *See*—
Bostick, William D.; Denton, Mark S.; and Dinsmore, Stanley R., 4,357,420, Cl. 435-8.000.
de Oliveira, Nenzito C. Self-watering planter. 4,356,665, Cl. 47-80.000.
de Sivry, Bruno J. M.; Carsac, Claude R.; and Bonnet, Christian, to Compagnie Francaise des Petroles. Electron beam welding with beam focus controlled responsive to absorbed beam power. 4,357,517, Cl. 219-121.0ES.
Desoutter Limited: *See*—
Dudden, Christopher J.; and Blomfield, Peter J., 4,357,124, Cl. 408-130.000.
De Toffol, Andrea: *See*—
Pippa, Roberto; De Toffol, Andrea; Lepori, Agostino; and Mara, Luigi, 4,357,270, Cl. 523-335.000.
Diamond, Maxwell; and Rose, Jack. Page construction for a stamp album. 4,356,649, Cl. 40-159.000.
Diamond Shamrock Corporation: *See*—
Solomon, Frank, 4,357,262, Cl. 252-425.300.
Dickey, Baron C. High fidelity loudspeaker system for aurally simulating wide frequency range point source of sound. 4,357,490, Cl. 179-1.00E.
Dickinson, John D., to Westinghouse Electric Corp. Self-cleaning orifice assembly. 4,356,837, Cl. 137-238.000.
Dickinson, Malcolm I.: *See*—
Dale, John R.; and Dickinson, Malcolm I., 4,357,688, Cl. 367-4.000.
Diebler, Herman G.: *See*—
Cassaday, Michael M.; Diebler, Herman G.; Svenjak, Dario; and Uffenheimer, Kenneth F., 4,357,301, Cl. 422-64.000.
Dierksheide, Cornell W. Collapsible saddle rack. 4,356,922, Cl. 211-13.000.
Diesel Kiki Co., Ltd.: *See*—
Kado, Norio, 4,356,966, Cl. 237-12.30A.
Sutoh, Shinji; Harada, Takeshi; and Kaneko, Shinichi, 4,356,705, Cl. 62-229.000.
Digital Equipment Corporation: *See*—
Saltz, Warren L.; and Vezza, Anthony S., 4,357,656, Cl. 364-200.000.
Dilks, Charles H., Jr., to Du Pont de Nemours, E. I., and Company. Drive for rotating seal. 4,357,235, Cl. 209-155.000.
Di Matteo, Paul: *See*—
Stern, Howard K.; Ross, Joseph A.; and Di Matteo, Paul, 4,357,108, Cl. 356-376.000.
Dinsmore, Stanley R.: *See*—
Bostick, William D.; Denton, Mark S.; and Dinsmore, Stanley R., 4,357,420, Cl. 435-8.000.
Dischert, William A., to RCA Corporation. Tape guide with path location and attitude adjustments. 4,357,641, Cl. 360-130.230.
Discovision Associates: *See*—
Winslow, John S., 4,357,533, Cl. 250-204.000.
DIT-MCO International Corporation: *See*—
Uren, Delbert L.; and Thompson, Forrest L., 4,357,575, Cl. 324-158.00F.
Diversey Corporation, The: *See*—
Ward, Elizabeth M.; and Buckingham, Gerald, 4,356,791, Cl. 119-14.430.
Dmitrenko, Valentina V.: *See*—
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.
Dober Chemical Corporation: *See*—
Dobrez, John F.; and Jacob, Jose T., 4,357,243, Cl. 210-752.000.
Dobhan, Herbert: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Dobhan, Herbert; and Horling, Peter, 4,357,056, Cl. 308-6.00C.
Dobler, Klaus, to Robert Bosch GmbH. Fuel injection nozzle. 4,356,979, Cl. 239-585.000.
Dobler, Klaus: *See*—
Hachtel, Hansjorg; and Dobler, Klaus, 4,356,732, Cl. 73-862.330.
Dobrez, John F.; and Jacob, Jose T., to Dober Chemical Corporation. Metal-working emulsion reclaiming process. 4,357,243, Cl. 210-752.000.
Dr. C. Otto & Comp. G.m.b.H.: *See*—
Wackerbarth, Folkard; Halbherr, Gerd; and Kuhlmann, Horst, 4,357,211, Cl. 202-111.000.
Dr. Otto C. Strecker KG: *See*—
Hornung, Hans; and Schneider, Wolfgang, 4,356,745, Cl. 83-341.000.
Doke, Nobumichi: *See*—
Enomoto, Makoto; and Doke, Nobumichi, 4,357,349, Cl. 424-302.000.
Dondelewski, Michael A. Carbonaceous pellets and method of making. 4,357,145, Cl. 44-20.000.
Donovan, Joseph C.: *See*—
Leister, Harry M.; Donovan, Joseph C.; and Hall, Wilbur S., 4,357,372, Cl. 427-345.000.
Dorny, C. Nelson: *See*—
Stefanski, Andrew; and Dorny, C. Nelson, 4,357,673, Cl. 364-582.000.
Dougherty, Lawrence W.; and Meyle, William H., to Zenith Radio Corporation. Shadow mask inserter apparatus and method. 4,356,606, Cl. 29-25.150.
Dow Chemical Company, The: *See*—
Hinkamp, Paul E., 4,357,281, Cl. 260-512.00C.
Pawloski, Chester E., 4,357,327, Cl. 424-200.000.
Pawloski, Chester E., 4,357,328, Cl. 424-200.000.
Tomalia, Donald A.; and Adaway, Timothy J., 4,357,464, Cl. 528-481.000.
Zweigle, Maurice L.; and Hickman, Janet C., 4,357,168, Cl. 106-171.000.
Downs, James W. Acoustical reflectors. 4,356,880, Cl. 181-30.000.

Drefko, Joseph; and Spector, George. Two way radio safety helmet. 4,357,711, Cl. 455-89.000.

Du Pont Canada Inc.: *See—*
Hetherington, Brian L.; and Kelly, Peter Y., 4,357,294, Cl. 264-294.000.

Dubroeucq, Marie-Christine; Gueremy, Claude G. A.; Renault, Christian L. A.; and Le Fur, Gerard R., to Pharmindustrie. Indene derivatives, processes for their preparation, and their use as medicaments. 4,357,337, Cl. 424-267.000.

Ducharme, Gerald L.: *See—*
Reed, Kenneth J.; Saturno, Patrick H.; and Ducharme, Gerald L., 4,357,392, Cl. 428-522.000.

Dudden, Christopher J.; and Blomfield, Peter J., to Desoutter Limited. Power feed rotary tool. 4,357,124, Cl. 408-130.000.

Dulondel, Jacques. D.C. Impulsion motor. 4,357,551, Cl. 310-46.000.

Dunlop Limited: *See—*
Kenyon, Dennis, 4,357,032, Cl. 280-681.000.

Dupen, Clive F. G., to Electric Power Research Institute, Inc. Apparatus for thermally insulating nuclear reactor primary vessels. 4,357,297, Cl. 376-290.000.

Du Pont de Nemours, E. I., and Company: *See—*
Anderson, Daniel G.; England, David C.; and Milian, Alwin S., Jr., 4,357,282, Cl. 260-544.00F.
Cohen, Abraham B.; and Gervay, Joseph E., 4,357,413, Cl. 430-253.000.
Dilks, Charles H., Jr., 4,357,235, Cl. 209-155.000.
Fan, Roxy, 4,357,416, Cl. 430-302.000.

Duriron Company, The: *See—*
Helferich, Richard L.; and Shook, William B., 4,357,165, Cl. 106-38.300.

Durr, Rolf: *See—*
Trekel, Rainer; Lorenzen, Uwe; Rehme, Wolfgang; Durr, Rolf; Litschko, Hans G.; and Thiele, Wilfried, 4,356,654, Cl. 43-9.000.

Duske, Wilfried P.; and Frank, Lowell C., to Progressive Development, Inc. Fluid borne particulate separator. 4,357,152, Cl. 55-257.00C.

DuVall, Wilbur E., to Xerox Corporation. Transducer system with velocity signal generation. 4,357,566, Cl. 318-636.000.

Dwyer, Francis G.; and Jenkins, Edwin E., to Mobil Oil Corporation. Catalytic conversion with zeolite ZSM-39. 4,357,233, Cl. 208-109.000.

Dyer, Michael P.: *See—*
Sweet, Anthony W.; and Dyer, Michael P., 4,357,495, Cl. 179-77.000.

Dyson Refractories Limited: *See—*
Thornton, James M., 4,356,994, Cl. 249-109.000.

Dziak, William A., to Mining Tools, Div. of Smith Int'l., Inc. Cutter mounting and apparatus and method for a drill bit. 4,356,873, Cl. 175-410.000.

E. Allman & Company Limited: *See—*
McFarlane, Phillip J., 4,357,670, Cl. 364-510.000.

e.d. VEGLIA: *See—*
Gomez, Michel, 4,356,728, Cl. 73-295.000.

Eastman Kodak Company: *See—*
Anderson, Richard B.; and Kalenda, Norman W., 4,357,410, Cl. 430-223.000.
Anderson, Richard B.; and Kalenda, Norman W., 4,357,412, Cl. 430-223.000.
Bowman, Wayne A., 4,357,409, Cl. 430-207.000.
Fetterman, Clyde L., 4,357,096, Cl. 355-3.00P.
Hartman, Susan E., 4,357,415, Cl. 430-293.000.
Kalenda, Norman W., 4,357,411, Cl. 430-223.000.
Kroll, Arthur S., 4,357,103, Cl. 355-3.0DD.
Lamberts, Robert L.; and Varner, Jerry R., 4,357,625, Cl. 358-75.000.
Pierce, Zona R.; and Frank, David S., 4,357,363, Cl. 427-2.000.
Reed, Kenneth J.; Saturno, Patrick H.; and Ducharme, Gerald L., 4,357,392, Cl. 428-522.000.
Rose, Robert R.; and Eldredge, Carl H., 4,357,408, Cl. 430-207.000.
Sloan, Cephas H.; Wright, Jerry A.; and Morie, Gerald P., 4,357,379, Cl. 428-113.000.

Eaton Corporation: *See—*
Clark, David P., 4,356,799, Cl. 123-90.650.
Teeter, Terry E., 4,356,889, Cl. 184-6.120.
Tenner, Richard B.; and Bracey, Robert G., 4,357,511, Cl. 200-314.000.
Urban, John A., 4,356,897, Cl. 188-1.110.

Ebauches Bettlach, S.A.: *See—*
Bachmann, Peter, 4,357,695, Cl. 368-322.000.

Eberle, Gunter. Centrifugal bucket. 4,356,957, Cl. 233-26.000.

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Eckart, Francis H., to General Motors Corporation. Regenerator seal design. 4,357,025, Cl. 277-26.000.

Eckels, Phillip W.; Litz, Donald C.; and Patterson, Adolphus, to Westinghouse Electric Corp. Liquid coolant transfer device. 4,356,700, Cl. 62-55.000.

Eckstein, Dana L.: *See—*
May, Klaus D.; and Eckstein, Dana L., 4,357,544, Cl. 307-34.000.

Edmonds, Anthony C. F.: *See—*
Binet, Rejean; Cloutier, Joseph A. R.; Edmonds, Anthony C. F.; Holden, Harold W.; and McNicol, Melvin A., 4,357,184, Cl. 149-2.000.

EDV-Druck Walter Schnug KG: *See—*
Schnug, Lieselotte, 4,357,380, Cl. 428-138.000.

Edwards, Douglas C., to Polysar Limited. Vulcanizates. 4,357,432, Cl. 523-351.000.

Edwards, Douglas F.; and Dean, Raymond H., to Tempmaster Corporation. Flow adjustment mechanism for air distribution systems. 4,356,963, Cl. 236-49.000.

Edwards, Larry W., to CPC International Inc. Process for continuous crystallization of alpha monohydrate dextrose utilizing high agitation. 4,357,172, Cl. 127-60.000.

Ehnstrom, Lars K. J.: *See—*
Wahlstrom, Lennart; and Ehnstrom, Lars K. J., 4,356,932, Cl. 220-329.000.

Ehresman, Virgil A.: *See—*
Kingston, Samuel C.; and Ehresman, Virgil A., 4,357,610, Cl. 343-12.00A.

Ehrlich, Paul; and Wilson, Michael, to Traffic Safety Devices Company. Vehicular hazard warning system. 4,357,594, Cl. 340-72.000.

Eide, Ragnar: *See—*
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Eigtved, Peter: *See—*
Branner-Jogensen, Sven; Schneider, Palle; and Eigtved, Peter, 4,357,357, Cl. 426-36.000.

Eisenmann, John L. Method and apparatus for recovering charged ions from solution. 4,357,220, Cl. 204-180.00R.

Eka AB: *See—*
Holmberg, Krister; Johansson, Jan-Allan Y.; and Wallin, Gerd E., 4,357,454, Cl. 527-403.000.

Eldredge, Carl H.: *See—*
Rose, Robert R.; and Eldredge, Carl H., 4,357,408, Cl. 430-207.000.

Electric Power Development Co. Ltd.: *See—*
Nakabayashi, Yasuyuki; Matsuno, Yoshiyuki; and Katsuta, Kihei, 4,356,982, Cl. 241-17.000.

Electric Power Research Institute, Inc.: *See—*
Appleby, Anthony J., 4,357,400, Cl. 429-111.000.
Dupen, Clive F. G., 4,357,297, Cl. 376-290.000.

Eli Lilly and Company: *See—*
Miller, Jean C.; and Gutowski, Gerald E., 4,357,334, Cl. 424-262.000.
Ose, Earl E.; and Kirst, Herbert A., 4,357,325, Cl. 424-180.000.
Spitzer, Wayne A.; and Goodson, Theodore, Jr., 4,357,275, Cl. 260-245.400.

Ellington, Gordon H.: *See—*
Hamilton, C. Ray; Mitchell, William O.; and Ellington, Gordon H., 4,356,744, Cl. 83-24.000.

Ellis, James B.; Sims, Raymond E.; and Savit, Joseph, to AES Technology Systems, Inc. Apparatus for applying a degrading chemical to envelopes. 4,356,679, Cl. 53-381.00R.

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Embro, Joseph J., Jr., to Mead Corporation, The. Method and apparatus for aligning and separating containers of diverse shapes. 4,356,908, Cl. 198-461.000.

Emtage, John S.; and Carey, Norman H., to G. D. Searle & Co. Synthetic gene coding for influenza hemagglutinin. 4,357,421, Cl. 435-68.000.

Endo, Koichi, to Konishiroku Photo Industry Co., Ltd. Electrostatic recording apparatus. 4,357,098, Cl. 355-15.000.

Energy Resources Company, Inc.: *See—*
Porter, James H.; Davis, Robert; and Zakaria, Jehangir, 4,356,779, Cl. 110-245.000.

Engelhardt, Friedrich; Riegel, Ulrich; Hille, Martin; and Wittkus, Heinz, to Cassella Aktiengesellschaft. Water-soluble copolymer and its preparation. 4,357,245, Cl. 252-8.50C.

England, David C.: *See—*
Anderson, Daniel G.; England, David C.; and Milian, Alwin S., Jr., 4,357,282, Cl. 260-544.00F.

Enomoto, Makoto; and Doke, Nobumichi, to Nitto Chemical Industry Co.; and Chemisciences Inc. Hepatic cancer preventing and treating medicine for lower animals. 4,357,349, Cl. 424-302.000.

Environmental Control Products, Inc.: *See—*
McRee, Robert E., Jr., 4,356,778, Cl. 110-244.000.

Epoxon Products, Inc.: *See—*
Wilson, Thomas T., 4,356,857, Cl. 160-229.00B.

Erickson, Donald C. Internally heat pumped single pressure distillative separations. 4,357,153, Cl. 62-34.000.

Erickson, Donald C. Dual temperature dual desulfurization. 4,357,308, Cl. 423-210.500.

Erikson, Richard A.: *See—*
Carr, Robert B.; and Erikson, Richard A., 4,356,960, Cl. 233-46.000.

Ernst, Horst M.: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Dobhan, Herbert; and Horling, Peter, 4,357,056, Cl. 308-6.00C.

Ernst, Max. Apparatus for the temporary reception of radioactive waste. 4,357,541, Cl. 250-507.100.

Erwin Sick GmbH, Optik-Elektronic: *See—*
Mankel, Siegfried; Ostertag, Klaus; and Schreyer, Heinz, 4,357,071, Cl. 350-6.800.

Espe, Roy H.; and Main, W. Eric, to Motorola, Inc. EFL Toggle flip-flop. 4,357,547, Cl. 307-272.00A.

Esper, Friedrich; and Gohl, Walter, to Robert Bosch GmbH. Prosthetic device. 4,356,571, Cl. 3-1.000.
Essary, William A.: *See*—
Grunewalder, John F.; Essary, William A.; and Ostrowski, John S., 4,357,396, Cl. 428-626.000.
Estes, John H.; and Buinicky, Ernest P., to Texaco Inc. Method for extracting hydrocarbons from oil shale. 4,357,231, Cl. 208-11.00R.
Etablissement Public dit: Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Guillemin, Genevieve; Patat, Jean-Louis; and Patel, Alain, 4,356,572, Cl. 3-1.900.
Etablissements Maurise Heliot SA: *See*—
Heliot, Daniel, 4,356,602, Cl. 26-84.000.
Etablissements Trouvay & Cauvin: *See*—
Morello, Aldo, 4,356,838, Cl. 137-242.000.
Ethyl Corporation: *See*—
Hafele, Robert X., 4,357,296, Cl. 264-532.000.
Etsuo Ito: *See*—
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,357,323, Cl. 424-180.000.
Everett, Kenneth. High vehicle driver mount and dismount lift. 4,356,894, Cl. 187-9.00R.
Everett, Stephen M., to John Fluke Mfg. Co., Inc. Universal circuit board test fixture. 4,357,062, Cl. 339-18.00R.
Everitt, Delmar K.: *See*—
Goldfarb, Adolph E.; and Everitt, Delmar K., 4,356,657, Cl. 46-12.000.
Everts, Robert G. Crankshaft with laminated counterweight. 4,356,605, Cl. 29-6.000.
Ex-Cell-O Corporation: *See*—
MacMillan, Robert E., 4,357,552, Cl. 310-90.000.
Exploration Logging, Inc.: *See*—
Jeter, John D.; and More, Henry S., 4,356,629, Cl. 29-885.000.
Exxon Research and Engineering Co.: *See*—
Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,357,229, Cl. 208-10.000.
Horsley, John A., 4,357,307, Cl. 423-3.000.
Kramer, George M., 4,357,481, Cl. 585-724.000.
Kramer, George M., 4,357,482, Cl. 585-724.000.
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Ezquerro, Isaac E. Tape applicator. 4,357,198, Cl. 156-391.000.
Fabrik fur Technische Laufwerke und Apparate Kundo Kieninger & Obergfell: *See*—
Broghammer, Rudolf; and Kaser, Franz, 4,357,692, Cl. 368-75.000.
Fairchild Camera and Instr. Corp.: *See*—
Rufford, Roger V., 4,357,687, Cl. 365-230.000.
Fairchild, Wayne K. Apparatus for forming flexible tubing. 4,357,199, Cl. 156-428.000.
Faiveley S.A.: *See*—
Clerc, Alain M., 4,357,501, Cl. 191-83.000.
Falk, Roland: *See*—
Vaeth, Guenter; Bachmann, Rudolf; Senkpiel, Werner; Hartmann, Hans-Joerg; Falk, Roland; and Motz, Herbert, 4,357,378, Cl. 428-64.000.
Fallas, David M. Collating unit for bagged products and the like. 4,356,906, Cl. 198-413.000.
Fan, John C. C.; and Gale, Ronald P., to Massachusetts Institute of Technology. Heteroepitaxy of germanium silicon on silicon utilizing alloying control. 4,357,183, Cl. 148-181.000.
Fan, Roxy, to Du Pont de Nemours, E. I., and Company. Process for preparation of multilayer photosensitive solvent-processable litho element. 4,357,416, Cl. 430-302.000.
Fancher, Llewellyn W.; and Scher, Herbert B., to Stauffer Chemical Company. Lepidoptericidal isothiourea compounds. 4,357,351, Cl. 424-326.000.
Fang, Herbert H.: *See*—
Buffington, Chester G.; Fang, Herbert H.; Friedfeld, Barry A.; Kaniecki, Thaddeus J.; Kennedy, John W.; Liu, Chong-tan; Sternberg, Morton; Feng, Henry H.; Chen, Paul Y.; Mukaddam, Waheed; and Narasimhan, Pattamadai E., 4,357,175, Cl. 134-10.000.
Fansteel Inc.: *See*—
Lambert, John B.; and Schussler, Mortimer, 4,357,382, Cl. 428-212.000.
Farris, Richard J., to Chien, James C. W.; and MacKnight, William J., part interest to each. Elastomeric energy absorbing system. 4,357,041, Cl. 293-136.000.
Farris, William H. Apparatus for holding and displaying a poster. 4,356,647, Cl. 40-152.100.
FATA S.A.: *See*—
Strouk, Gilbert, 4,357,562, Cl. 318-135.000.
Fay, Robert W., to Sims, Royal W. Process and apparatus for continuously measuring slump. 4,356,723, Cl. 73-54.000.
Fedan, Jeffrey S.; O'Donnell, John P.; and Hogaboom, G. Kurt, to United States of America, Health and Human Services, a part interest. Specific irreversible antagonism of histamine receptors by photoaffinity actuated compounds. 4,357,341, Cl. 424-273.00R.
Federal Reserve Bank of Richmond: *See*—
Smith, Harry B.; Robertson, Kenneth L.; and Smith, Robert T., 4,357,528, Cl. 235-92.0SB.
Federal Signal Corporation: *See*—
Gosswiller, Earl W., 4,357,595, Cl. 340-81.00R.
Feilchenfeld, Michal M., to Westinghouse Electric Corp. Multi-line scan mark verification circuit. 4,357,596, Cl. 340-146.30Z.
Feinman, Reichard D.: *See*—
Rushbrook, Julie I.; and Feinman, Reichard D., 4,357,174, Cl. 134-10.000.
Feldkamper, Richard; Achelpohl, Fritz; and Winnemoller, Aloys, to Windmoller & Holscher. Apparatus for depositing sections welded off from a web of film. 4,357,139, Cl. 493-204.000.
Feldman, Isai N.: *See*—
Mantulo, Alexandr P.; Novikov, Ivan N.; and Feldman, Isai N., 4,357,213, Cl. 203-89.000.
Felice, Patrick E.: *See*—
Bartko, John; Felice, Patrick E.; and Blais, Phillip D., 4,357,417, Cl. 430-323.000.
Fellinger, Michael W., to Monolithic Systems, Corp. Floppy-disk interface controller. 4,357,657, Cl. 364-200.000.
Fellrath, Francoise: *See*—
Massoni, Francois; Canarelli, Filippe; and Fellrath, Francoise, 4,357,558, Cl. 315-83.000.
Felmeri, Jozsef: *See*—
Takacs, Istvan; Felmeri, Jozsef; Kerey, Gyorgy; Rudolf, Peter; Banos, Zoltan; Vereczkey, Endre; and Bosits, Gyula, 4,357,306, Cl. 422-254.000.
Fencl, Vernon R., to Grotnes Metalforming Systems, Inc. Automotive rim roll forming drive system. 4,357,561, Cl. 318-50.000.
Feng, Henry H.: *See*—
Buffington, Chester G.; Fang, Herbert H.; Friedfeld, Barry A.; Kaniecki, Thaddeus J.; Kennedy, John W.; Liu, Chong-tan; Sternberg, Morton; Feng, Henry H.; Chen, Paul Y.; Mukaddam, Waheed; and Narasimhan, Pattamadai E., 4,357,175, Cl. 134-10.000.
Fenyvesi, Eva: *See*—
Szejtli, Jozsef; Zsadon, Bela; Fenyvesi, Eva; Horvath, nee Otta; Klara; and Tudos, Ferenc, 4,357,468, Cl. 536-56.000.
Ferlin, William J., to Ferlin, William J. Plural burner gas cooker. 4,356,810, Cl. 126-41.00R.
Fernandez, David; and Van Dyck, Francis. Reinforced foam core composite structure and method. 4,357,013, Cl. 273-73.00C.
Ferrofluidics Corporation: *See*—
Raj, Kuldip; and Schwartzman, Alan, 4,357,021, Cl. 277-1.000.
Raj, Kuldip, 4,357,022, Cl. 277-1.000.
Raj, Kuldip, 4,357,024, Cl. 277-1.000.
Yamamura, Akira, 4,357,023, Cl. 277-1.000.
Fetterman, Clyde L., to Eastman Kodak Company. Dispersion supply apparatus for photoelectrophoretic migration imaging. 4,357,096, Cl. 355-3.00P.
Fickert, Werner: *See*—
Orth, Winfried; Lange, Fritz W.; and Fickert, Werner, 4,357,277, Cl. 260-326.250.
Filipiak, Stanley E.: *See*—
McVey, John K.; and Filipiak, Stanley E., 4,357,646, Cl. 361-288.000.
Firestone Tire & Rubber Company, The: *See*—
Antkowiak, Thomas A.; and Serbin, David J., 4,357,458, Cl. 528-167.000.
Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary offset sheet printing machine for prime and verso printing. 4,356,766, Cl. 101-232.000.
Fischer, Winfried: *See*—
Alberts, Heinrich; Fischer, Winfried; Muller, Friedemann; Peters, Horst; Leuschke, Christian; and Baasch, Hans-Peter, 4,357,267, Cl. 524-40.000.
Fisher, Alfred J., III, to Fisher Corporation. Silent seat back recliner with quick release. 4,357,050, Cl. 297-367.000.
Fisher Corporation: *See*—
Fisher, Alfred J., III, 4,357,050, Cl. 297-367.000.
Fisher, Robert E.; and Weiner, Gerhard J., to Up-Right, Inc. Rotatable platform assembly. 4,356,887, Cl. 182-63.000.
Fishman, Lawrence R. Musical instrument transducer. 4,356,754, Cl. 84-1.160.
Fitte, Daniel, to Rical S.A. Distributing or pouring caps, particularly for bottles or other containers. 4,356,939, Cl. 222-541.000.
Fleer, Ernst O.; Gunther, Werner; and Muether, Manfred, to Siemens Aktiengesellschaft. Flexible film cassette. 4,357,539, Cl. 378-170.000.
Fleischaker, Robert J., Jr.: *See*—
Giard, Donald J.; and Fleischaker, Robert J., Jr., 4,357,422, Cl. 435-68.000.
Fleming, Daniel J.: *See*—
Bergeron, David L.; Fleming, Daniel J.; and Stephens, Geoffrey B., 4,357,178, Cl. 148-1.500.
Fleming, James S., Jr.; and Buyniski, Joseph P., to Bristol-Myers Company. Pharmaceutical compositions. 4,357,330, Cl. 424-232.000.
Fluke, Sydney C.: *See*—
Houseman, J. Daniel; and Fluke, Sydney C., 4,356,765, Cl. 101-228.000.
FMC Corporation: *See*—
Braksmayer, Diza P., 4,357,433, Cl. 524-139.000.
Brown, William R., 4,356,911, Cl. 198-766.000.
Milberger, Lionel J., 4,356,841, Cl. 137-624.180.
Fogarasy, Attila A.: *See*—
Marshall, Fred; and Fogarasy, Attila A., 4,356,947, Cl. 227-5.000.
Foller, Werner, to Gestra-KSB Vertriebsgesellschaft mbH & Co. KG. Thermic control element. 4,356,964, Cl. 236-58.000.
Folser, George R.: *See*—
Hardman, Carl C.; and Folser, George R., 4,357,224, Cl. 204-255.000.

Ford Motor Company: *See—*
Cairns, Thomas M.; and Connors, David G., 4,357,066, Cl. 339-176.0MP.
Ford Printing & Packaging Ltd.: *See—*
Sharp, David, 4,356,951, Cl. 229-17.00R.
Forest Laboratories, Inc.: *See—*
Schor, Joseph M., 4,357,469, Cl. 536-91.000.
Formax, Inc.: *See—*
Sandberg, Glenn A.; Janssen, Wilbur; and Bachmann, Duncan, 4,356,595, Cl. 17-45.000.
Forrest, William J. Wind collection apparatus. 4,357,130, Cl. 416-197.00A.
Fortescue, Michael, to A. C. Cossor Limited. Multi-station telemetry system using fibre optics cables. 4,357,606, Cl. 340-870.010.
Fortin, Jacques: *See—*
Waters, Michael J.; Taschereau, Andre; and Fortin, Jacques, 4,356,784, Cl. 114-248.000.
Fortuna, Jon A., to AMP Incorporated. Switch device for use on circuit board. 4,357,510, Cl. 200-283.000.
Foster Grant Corporation: *See—*
Haddad, Theodore A.; Kondig, Walter; and Phillips, Richard A., 4,357,295, Cl. 264-341.000.
Foster, Kenneth D.: *See—*
Arnold, Sara J.; and Foster, Kenneth D., 4,357,309, Cl. 423-486.000.
Fournier, Jean: *See—*
Loiez, Jean-Louis; and Fournier, Jean, 4,356,795, Cl. 122-511.000.
Fouss, James L.; Parker, John J.; and Sting, Donald W., to Hancor, Inc. Method and apparatus for manufacturing non-round plastic tubing. 4,357,190, Cl. 156-244.130.
Fraenkel, Herbert, to Gunson's Sortex Limited. Inspection apparatus, e.g. for a sorting machine. 4,356,921, Cl. 209-576.000.
Frank, David S.: *See—*
Pierce, Zona R.; and Frank, David S., 4,357,363, Cl. 427-2.000.
Frank, Dieter; and Metcalfe, Lincoln D., to Akzona Incorporated. Hydroxybenzyl amines as corrosion inhibitors and paint adhesion promoters. 4,357,181, Cl. 148-6.14R.
Frank J. Zamboni & Co.: *See—*
Zamboni, Richard F., 4,356,584, Cl. 15-98.000.
Frank, Lowell C.: *See—*
Duske, Wilfried P.; and Frank, Lowell C., 4,357,152, Cl. 55-257.00C.
Frantz, Gene A.: *See—*
Henderson, Alva E.; and Frantz, Gene A., 4,357,489, Cl. 179-1.0SM.
Franz, Otto: *See—*
Kramer, Ludwig; Franz, Otto; and Lotze, Walter, 4,357,710, Cl. 455-76.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 4,356,771, Cl. 104-7.00B.
Frederick, David C., to Hope Plastic Corporation. Combination spline coupling and spindle washer for roving frames. 4,356,689, Cl. 57-102.000.
Fredrickson, Donald L. Molding curvature template fixture. 4,356,849, Cl. 144-144.00R.
Freebersyser, Steven R.: *See—*
Haag, Thomas E.; Freebersyser, Steven R.; and Loncrini, Donald F., 4,357,258, Cl. 252-312.000.
Freerks, Conrad T., to Minnesota Mining & Manufacturing Company. Apparatus and method for in-line planing of lumber using angled abrasive head. 4,356,670, Cl. 51-139.000.
Freesh, Charles W. Exhaust gas recirculation system. 4,356,806, Cl. 123-570.000.
French, Michael P., to RCA Corporation. Search type tuning system with synchronization signal presence transition detector. 4,357,632, Cl. 358-193.100.
Freyman, Ronald L., to Bell Telephone Laboratories, Incorporated. Ripple-carry generating circuit with carry regeneration. 4,357,675, Cl. 364-786.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Muller-Kuhn, Helmut; Scharren, Gunter; Kohlmeier, Wilfried; Grillo, Michael; and Rost, Jurgen, 4,356,929, Cl. 220-270.000.
Friedfeld, Barry A.: *See—*
Buffington, Chester G.; Fang, Herbert H.; Friedfeld, Barry A.; Kaniecki, Thaddeus J.; Kennedy, John W.; Liu, Chong-tan; Sternberg, Morton; Feng, Henry H.; Chen, Paul Y.; Mukaddam, Waheed; and Narasimhan, Pattamadai E., 4,357,175, Cl. 134-10.000.
Friedland, Harry; and Langill, Addison W., Jr., to Powell Industries, Inc. Digital fluid flow control system. 4,356,840, Cl. 137-487.500.
Friello, Dominick R.: *See—*
Kehoe, Gary; Puglia, Wayne J.; Witzel, Frank; Friello, Dominick R.; and Mackay, Donald A. M., 4,357,354, Cl. 426-3.000.
Friemann, Hans: *See—*
Sattlegger, Hans; Schnurrbusch, Karl; Boll, Manfred; and Friemann, Hans, 4,357,438, Cl. 524-490.000.
Friese, Karl-Hermann: *See—*
Muller, Klaus; Friese, Karl-Hermann; and Holfelder, Gerhard, 4,356,628, Cl. 29-878.000.
Fritz Eichenauer, Firma: *See—*
Ohnmacht, Helmut; and Meywald, Klaus, 4,357,521, Cl. 219-375.000.
Frohberger, Paul-Ernst: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,357,338, Cl. 424-269.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Matsui, Fujio, 4,356,797, Cl. 123-440.000.
Uchiyama, Shintaro, 4,356,879, Cl. 180-247.000.
Fuji Photo Film Co., Ltd.: *See—*
Osawa, Sadao; Taguchi, Seiichi; and Honjo, Satoru, 4,357,404, Cl. 430-49.000.
Fuji Xerox Co., Ltd.: *See—*
Tamai, Masayoshi, 4,357,614, Cl. 346-75.000.
Fujikawa, Kozo, to Toyo Kogyo Co., Ltd. Hydraulic control system for a rock drill. 4,356,871, Cl. 173-8.000.
Fujioka, Futoshi: *See—*
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,357,360, Cl. 426-538.000.
Fujitsu Fanuc Limited: *See—*
Imazeki, Ryoji; Hattori, Seiichi; and Mizuno, Yutaka, 4,357,604, Cl. 340-731.000.
Imazeki, Ryoji; Sasaki, Takao; and Yamazaki, Etsuo, 4,357,664, Cl. 364-474.000.
Fujitsu Limited: *See—*
Higuchi, Mitsuo, 4,357,581, Cl. 331-66.000.
Fukatsu, Shunzo: *See—*
Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,357,465, Cl. 536-13.800.
Fukui, Toshiyasu: *See—*
Baba, Yoshio; Tanabe, Zenichi; Fukui, Toshiyasu; and Ikeda, Hiroshi, 4,357,397, Cl. 428-654.000.
Fukushima, Kazunobu; and Motokawa, Masatomo, to Tokai Electric Wire Company Limited; and Toyota Jidosha Kogyo Kabushiki Kaisha. Interlocking electric connectors. 4,357,070, Cl. 339-278.00T.
Fuller, Charles H.: *See—*
Knighton, Mark S.; Fuller, Charles H.; Sims, Anson; Howden, Ashley G.; Kingsbury, L. C. James; and Jones, Lawrence T., 4,357,488, Cl. 179-1.0SC.
Furr, Danny L., to Phillips Petroleum Company. Temperature control for preheating a crude oil feedstock. 4,356,863, Cl. 165-1.000.
Furuya, Katusuke, to Laurel Bank Machine Co., Ltd. Anti-jamming means for coin counting machines. 4,356,829, Cl. 133-8.00R.
G. D. Searle & Co.: *See—*
Emtage, John S.; and Carey, Norman H., 4,357,421, Cl. 435-68.000.
Gabrielson, David L.; and Mohr, Larry D., to Belt Master, Inc. Method and apparatus for cleaning abrasive surfaces. 4,356,671, Cl. 51-325.000.
Gailey, J. Lynn, to Alcan Aluminum Corporation. Siding panel systems and methods of installation. 4,356,673, Cl. 52-127.100.
Gala, Jerry. Flush control apparatus. 4,356,576, Cl. 4-661.000.
Gale, Ronald P.: *See—*
Fan, John C. C.; and Gale, Ronald P., 4,357,183, Cl. 148-181.000.
Gall, John C., to Sears, Roebuck and Co. Bail. 4,357,042, Cl. 294-31.200.
Galley, Paul L. Musical electro magnetic analog synthesizer controlled rocket engine. 4,356,753, Cl. 84-1.040.
Gallis, Anthony J.; and Ahluwalia, Prabh S., to Harsco Corporation. Corner forming apparatus for a concrete wall form. 4,356,993, Cl. 249-27.000.
Galluzzi, Giovanni, to Giulio Fiocchi, S.p.A. Self-propelling projectile for firearms. 4,356,769, Cl. 102-380.000.
Garrett Corporation, The: *See—*
Beck, William H., 4,357,655, Cl. 363-42.000.
Mason, John L., 4,356,696, Cl. 60-606.000.
Garza, Elio M., to Investigacion FIC Fideicomiso. Gob distributor for the shaping of articles of glass and othermaterials. 4,357,158, Cl. 65-225.000.
Gaskell, Alfred J., to Pako Corporation. Constant conveyor web output velocity compensator for variable input web velocities. 4,356,946, Cl. 226-117.000.
Gassert, Willy, to Wirz, Ernst, a part interest. Control valve set for a completely pneumatical low- and operation pressure control. 4,356,842, Cl. 137-625.600.
Gaylord, Edson C.; Black, David K.; Anderson, Russell L.; and Morton, Philip O., to Gaylord Industries, Inc. Water spray fire protection for hoods over cooking units. 4,356,870, Cl. 169-65.000.
Gaylord Industries, Inc.: *See—*
Gaylord, Edson C.; Black, David K.; Anderson, Russell L.; and Morton, Philip O., 4,356,870, Cl. 169-65.000.
Gee, Glen R., to Huntington Tool, Inc. Temperature indicator. 4,356,790, Cl. 116-216.000.
Gehrett, Larry J.: *See—*
Yeager, Robert W.; and Gehrett, Larry J., 4,356,985, Cl. 244-103.00R.
Geiger, John H., Jr.: *See—*
Boden, Richard M.; and Geiger, John H., Jr., 4,357,247, Cl. 252-8.800.
Geither, John D.: *See—*
Hunt, Robert P.; Geither, John D.; and Hrdlicka, Victor J., 4,357,538, Cl. 378-175.000.
Gem Industries, Inc.: *See—*
Heininger, Richard T.; and Burnham, Benjamin K., 4,356,593, Cl. 16-251.000.
General Electric Company: *See—*
Bain, Benjamin H., Jr., 4,357,519, Cl. 219-256.000.
Leach, John G.; and Carroll, James J., 4,357,588, Cl. 337-160.000.
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,357,395, Cl. 428-607.000.
Mahony, John E., 4,356,731, Cl. 73-631.000.
McCarty, Lewis V., 4,357,365, Cl. 427-52.000.
Piper, William W., 4,357,559, Cl. 315-248.000.
Rosenquist, Niles R., 4,357,271, Cl. 523-212.000.
White, Mary A.; and Brezniak, Diane V., 4,357,443, Cl. 524-860.000.

Wolters, Richard A., Jr.; Lee, Tommy C.; and Matzner, Bruce, 4,357,298, Cl. 376-441.000.
General Fabric Fusing, Inc.: *See*—
Wilson, Robert J., 4,357,197, Cl. 156-354.000.
General Motors Corporation: *See*—
Eckart, Francis H., 4,357,025, Cl. 277-26.000.
General Nucleonics, Inc.: *See*—
Blincow, Donald W.; and Parks, Robert G., 4,356,874, Cl. 177-210.0FP.
George, Stephen; and George, Thomas H., to Subtex, Inc. Flame resistant insulating fabric compositions prepared by plasma spraying. 4,357,387, Cl. 428-246.000.
George, Thomas H.: *See*—
George, Stephen; and George, Thomas H., 4,357,387, Cl. 428-246.000.
Geosource Inc.: *See*—
Smither, Miles A., 4,357,577, Cl. 330-51.000.
Gerding, Charles C.; and Rechtorik, Stephen M., to Jones & Laughlin Steel Corporation. Railway ingot mold car. 4,357,125, Cl. 410-44.000.
Gerhard, Helmut, to Westerwalder Eisenwerk Gerhard GmbH. Pressure-resistant container for liquids, gases or loose material composed of two or more shells. 4,356,925, Cl. 220-1.500.
Gerkema, Jan; and Kamerbeek, Evert M. H., to U.S. Philips Corporation. Rotary anode X-ray tube. 4,357,555, Cl. 378-135.000.
Gerl, Josef: *See*—
Husslein, Julius; Rohrl, Franz; Nitzinger, Karl; and Gerl, Josef, 4,357,522, Cl. 219-400.000.
Gervay, Joseph E.: *See*—
Cohen, Abraham B.; and Gervay, Joseph E., 4,357,413, Cl. 430-253.000.
Gestra-KSB Vertriebsgesellschaft mbH & Co. KG: *See*—
Foller, Werner, 4,356,964, Cl. 236-58.000.
Giard, Donald J.; and Fleischaker, Robert J., Jr., to Massachusetts Institute of Technology. Method of enhancing interferon production. 4,357,422, Cl. 435-68.000.
Gilbert, Ted B., to Honeywell Inc. Preamplifier circuit. 4,357,637, Cl. 360-65.000.
Gimpel, Juergen: *See*—
Lehner, August; Gimpel, Juergen; Buethe, Ingolf; Hartmann, Heinrich; and Schenck, Hans-Uwe, 4,357,221, Cl. 204-181.00R.
Gindler, E. Melvin; and Daskalakis, Olga, to Sherwood Medical Industries Inc. Colorimetric urea determination in presence of long hydrocarbon chain amidobetaine. 4,357,144, Cl. 23-230.00B.
Giroir, William J. Paraffin wrinkle and bubble remover apparatus. 4,357,302, Cl. 422-99.000.
Gist-Brocades N. V.: *See*—
Apontoweil, Peter; and Krasselt, Manfred M., 4,357,320, Cl. 424-89.000.
Giulio Fiocchi, S.p.A.: *See*—
Galluzzi, Giovanni, 4,356,769, Cl. 102-380.000.
GKN Stenman, AB: *See*—
Widen, Bo G., 4,356,713, Cl. 70-364.00A.
Gladwin, Kirk M. Continuous casting mold side wall adjustment system. 4,356,860, Cl. 164-451.000.
Glass, Michael: *See*—
Koch, Edwin R.; and Glass, Michael, 4,357,355, Cl. 426-4.000.
Gloor, Bernhard, to Ciba-Geigy Corporation. Haloethylthienylsulphonates for the regulation of plant metabolism. 4,357,159, Cl. 71-90.000.
Gloor, Hans, to Concast AG. Method for changing the dimensions of a strand during continuous casting. 4,356,862, Cl. 164-491.000.
Glore, Thomas G., to Singer Company, The. Jointer-planer fence mounting. 4,356,851, Cl. 144-253.00G.
Go, Santos W.; and Burzynski, Dennis J., to Owens-Illinois, Inc. Polyester stabilization and composition. 4,357,461, Cl. 524-724.000.
Gobioff, Bruce D.: *See*—
Alvarez, Joseph A., III; Gobioff, Bruce D.; and West, Lynn P., 4,357,700, Cl. 370-83.000.
Goehlich, Lothar; and Haug, Jurgen, to Siemens Aktiengesellschaft. Cable fitting with slotted metallic housing. 4,357,487, Cl. 174-73.00R.
Gohl, Walter: *See*—
Esper, Friedrich; and Gohl, Walter, 4,356,571, Cl. 3-1.000.
Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Toy car wash apparatus and method. 4,356,657, Cl. 46-12.000.
Goldfarb, Adolph E. Multiple and varied motion stage apparatus for doll figure. 4,356,658, Cl. 46-13.000.
Goldsmith, Aaron. Carpet cleaning system. 4,356,590, Cl. 15-321.000.
Gomez, Michel, to e.d. VEGLIA. Device for measuring the level of a liquid. 4,356,728, Cl. 73-295.000.
Gonas, Edward J.: *See*—
Helfritch, Dennis J.; and Gonas, Edward J., 4,357,151, Cl. 55-6.000.
Goodchild, James. Rectangular-faced clock. 4,357,691, Cl. 368-62.000.
Gooden, Eldon D.; and Reed, James P., to Mactavish Machine Manufacturing Co. Conveying system. 4,357,128, Cl. 414-156.000.
Goodenough, John B.; and Mizushima, Koichi. Fast ion conductors. 4,357,215, Cl. 204-2.100.
Goodfellow, Robert C.; and Carter, Andrew C., to Plessey Handel und Investments AG. Sealing optical fibres into packages. 4,357,072, Cl. 350-96.200.
Goodson, Theodore, Jr.: *See*—
Spitzer, Wayne A.; and Goodson, Theodore, Jr., 4,357,275, Cl. 260-245.400.
Goodwin, Robert J.: *See*—
Amundsen, Joseph; Goodwin, Robert J.; and Wetzel, William H., 4,357,163, Cl. 106-18.350.
Goodyear Tire & Rubber Company, The: *See*—
Yeager, Robert W.; and Gehrett, Larry J., 4,356,985, Cl. 244-103.00R.
Gorin, Georges J., to Tegal Corporation. Apparatus for controlling a plasma reaction. 4,357,195, Cl. 156-345.000.
Gosswiller, Earl W., to Federal Signal Corporation. Flashing light warning system for vehicles. 4,357,595, Cl. 340-81.00R.
Goto, Kunio: *See*—
Takehara, Hideaki; Wada, Yoshiyo; Goto, Kunio; Suga, Kyusaku; and Watanabe, Hitoshi, 4,357,699, Cl. 369-173.000.
Govaert, George A., to U.S. Philips Corporation. Integrated frequency divider circuit. 4,357,546, Cl. 307-225.00R.
Grabmaier, Christa, to Siemens Aktiengesellschaft. Method for producing plate-, tape- or film-shaped Si crystal bodies for solar cells. 4,357,200, Cl. 156-603.000.
Grabmaier, Christa; and Holzapfel, Heinz, to Siemens Aktiengesellschaft. Method for producing plate-, tape- or film-shaped Si crystal bodies for solar cells. 4,357,201, Cl. 156-603.000.
Graf & Cie A.G.: *See*—
Graf, Ralph, 4,356,597, Cl. 19-113.000.
Graf, Ralph, 4,356,598, Cl. 19-114.000.
Graf, Ralph, to Graf & Cie A.G. Card clothing intended to be mounted to flats of a carding machine. 4,356,597, Cl. 19-113.000.
Graf, Ralph, to Graf & Cie A.G. Card support for carding layer. 4,356,598, Cl. 19-114.000.
Graham, Kenneth A., to Chrysler Corporation. Throttle body fuel injection. 4,356,801, Cl. 123-337.000.
Graiff, Leonard B., to Shell Oil Company. Method and fuel composition for control or reversal of octane requirement increase and for improved fuel economy. 4,357,148, Cl. 44-62.000.
Granberg, Elof, to Granberg Pump and Meter Ltd. Traction device. 4,356,816, Cl. 128-71.000.
Granberg Pump and Meter Ltd.: *See*—
Granberg, Elof, 4,356,816, Cl. 128-71.000.
Grand Chavin, Paul: *See*—
Plancon, Michel; Migeon, Jean-Pierre; and Grand Chavin, Paul, 4,357,693, Cl. 368-187.000.
Granda, Edward J.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,357,246, Cl. 252-8.600.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,357,253, Cl. 252-174.110.
Granstaff, Shelie M., Jr.: *See*—
Auborn, James J.; and Granstaff, Shelie M., Jr., 4,357,399, Cl. 429-104.000.
Grant, Peter M.: *See*—
Butler, Michael B. N.; Jacobs, Walter W.; and Grant, Peter M., 4,357,709, Cl. 455-20.000.
Gravallese, Debra A.: *See*—
Chan, Catherine T.; and Gravallese, Debra A., 4,357,310, Cl. 424-1.000.
Graviner Limited: *See*—
Ball, David N., 4,357,534, Cl. 250-339.000.
Gray, George W.: *See*—
Carr, Neil; Gray, George W.; and Kelly, Stephen M., 4,357,078, Cl. 350-350.00R.
Gray, Richard, to Allen-Bradley Company. Variable resistor. 4,357,591, Cl. 338-162.000.
Gray, Thomas J., to Olin Corporation. Cathode for chlor-alkali cells. 4,357,227, Cl. 204-290.00R.
Gray, William T. Washer anchoring construction. 4,357,063, Cl. 339-75.00P.
Greek, John C., Jr.; and Sprott, Charles N., to International Business Machines Corporation. Selective formatting of blocks of text codes in a memory of a word processing system. 4,357,680, Cl. 364-900.000.
Greenberg, George A., to Combined Logic Company. Interactive video production system. 4,357,624, Cl. 358-22.000.
Grigoleit, Georg; Matern, Kurt; Kohler, Helmut; and Collin, Gerd, to Rutgerswerke Aktiengesellschaft. Process for the production of thionaphthene from thionaphthene sulfonic acid. 4,357,472, Cl. 549-49.000.
Grillo, Michael: *See*—
Muller-Kuhn, Helmut; Scharren, Gunter; Kohlmeier, Wilfried; Grillo, Michael; and Rost, Jurgen, 4,356,929, Cl. 220-270.000.
Grischott, Jann: *See*—
Zehnder, Jurg; and Grischott, Jann, 4,357,048, Cl. 296-183.000.
Groh, Herbert-Hans: *See*—
Kern, Eckhart; Collonia, Harald; and Groh, Herbert-Hans, 4,356,802, Cl. 123-339.000.
Grollier, Jean-Francois; Monnais, Christian; and Peritz, Lyonel, to L'Oreal. Compositions for dyeing hair and their applications. 4,357,141, Cl. 8-406.000.
Grosemans, Jozef A., to U.S. Philips Corporation. Friction hinge having a balancing spring. 4,356,594, Cl. 16-256.000.
Gross, Josef: *See*—
Barkow, William H.; and Gross, Josef, 4,357,586, Cl. 335-211.000.
Grotnes Metalforming Systems, Inc.: *See*—
Fencl, Vernon R., 4,357,561, Cl. 318-50.000.
Grund, Christian: *See*—
Lemelson, Jerome H.; and Grund, Christian, 4,356,903, Cl. 194-1.00R.
Grundler, Helmut K.: *See*—
Wallasch, Lutz; and Grundler, Helmut K., 4,356,583, Cl. 15-21.00E.

Grunewalder, John F.; Essary, William A.; and Ostrowski, John S., to PPG Industries, Inc. Silver and copper coated articles protected by treatment with mercapto and/or amino substituted thiadiazoles or mercapto substituted triazoles. 4,357,396, Cl. 428-626.000.

GTE Products Corporation: *See*—
Pattanaik, Surya, 4,357,299, Cl. 420-487.000.

GTI Corporation: *See*—
Chason, Kenneth R., 4,357,514, Cl. 219-56.100.

Guan, Der-Yang, to Motorola, Inc. Solder composition. 4,357,162, Cl. 75-175.00R.

Gueremy, Claude G. A.: *See*—
Dubroeucq, Marie-Christine; Gueremy, Claude G. A.; Renault, Christian L. A.; and Le Fur, Gerard R., 4,357,337, Cl. 424-267.000.

Guest, John H., to Metal Closures Limited. Method of applying closures to containers. 4,356,680, Cl. 53-412.000.

Guillemin, Genevieve; Patat, Jean-Louis; and Patel, Alain, to Etablissement Public dit: Agence Nationale de Valorisation de la Recherche (ANVAR). Biodegradable implant useable as a bone prosthesis. 4,356,572, Cl. 3-1.900.

Guillemot, Gilbert. Detector for controlling the operation of a suction pump. 4,357,131, Cl. 417-12.000.

Gujer, Peter: *See*—
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,356,604, Cl. 28-255.000.

Guldenfels, Dieter: *See*—
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,356,604, Cl. 28-255.000.

Gundersen, George; Oien, Ewald; Eide, Ragnar; Wersland, Palmer; Borgersen, Kristian; Kloster, Paul, deceased; and by Johnsen, Ketil, executor, to Trio Engineering Ltd. A/S. Fish cleaning device for use on fish cleaning machine. 4,356,596, Cl. 17-58.000.

Gunson's Sortex Limited: *See*—
Fraenkel, Herbert, 4,356,921, Cl. 209-576.000.

Gunther, Werner: *See*—
Fleer, Ernst O.; Gunther, Werner; and Muether, Manfred, 4,357,539, Cl. 378-170.000.

Guth, Kenneth W. Foldable push dagger. 4,356,631, Cl. 30-154.000.

Gutowski, Gerald E.: *See*—
Miller, Jean C.; and Gutowski, Gerald E., 4,357,334, Cl. 424-262.000.

Guy, Louis R.: *See*—
Cord, Paul P.; and Guy, Louis R., 4,356,768, Cl. 102-275.900.

Guzder, Shapoor B.; and Zavodny, Eugene N., to Maremont Corporation. Valve assembly and reduced harshness shock absorber embodying the same. 4,356,898, Cl. 188-280.000.

Gylland, E. Frederick, Jr.: *See*—
Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., 4,356,775, Cl. 105-218.00A.

H. G. Weber & Co., Inc.: *See*—
Kidd, Arthur H.; and Petersen, Burdette A., 4,357,126, Cl. 414-46.000.

H.I.T. Industries, Ltd.: *See*—
Tawil, Abraham I., 4,356,899, Cl. 190-44.000.

Haag, Horst G.: *See*—
Blumel, Harald; and Haag, Horst G., 4,357,439, Cl. 524-493.000.

Haag, Thomas E.; Freebersyser, Steven R.; and Loncrini, Donald F., to Mallinckrodt, Inc. Stable emulsions of p-hydroxybenzoic acid esters and method of preparation. 4,357,258, Cl. 252-312.000.

Haas, David J., to North American Philips Corporation. Apparatus for inspecting hand-held articles and persons carrying same. 4,357,535, Cl. 378-57.000.

Hachtel, Hansjorg; and Dobler, Klaus, to Robert Bosch GmbH. Torque and torsion angle measuring apparatus. 4,356,732, Cl. 73-862.330.

Haddad, Theodore A.; Kondig, Walter; and Phillips, Richard A., to Foster Grant Corporation. Process for eliminating haze from articles made of cellulose acetate butyrate. 4,357,295, Cl. 264-341.000.

Hadersbeck, Hans; and Zukier, Hubert, to Siemens Aktiengesellschaft. Printed circuit board. 4,357,647, Cl. 361-400.000.

Hafele, Robert X., to Ethyl Corporation. Injection blow molding process. 4,357,296, Cl. 264-532.000.

Haggard, Richard A.: *See*—
Lewis, Sheldon N.; and Haggard, Richard A., 4,357,435, Cl. 524-239.000.

Hagstrom, Hans A. R., to Aktiebolaget Karlstads Mekaniska Werkstad. Control arrangements for hydraulically-operated wood particle or fiber board press. 4,356,763, Cl. 100-48.000.

Hahn, Heinz W.: *See*—
Mehra, Ravinder C.; Hahn, Heinz W.; and Aggarwal, Raj K., 4,357,240, Cl. 210-455.000.

Halbherr, Gerd: *See*—
Wackerbarth, Folkard; Halbherr, Gerd; and Kuhlmann, Horst, 4,357,211, Cl. 202-111.000.

Halgrimson, Darrell N.; Hanson, Donald H.; and King, Richard T., to Black Clawson, Inc. Veneer lathe scanning system. 4,356,850, Cl. 144-209.00R.

Hall, George W. Device for holding a surveyor's range pole. 4,356,637, Cl. 33-296.000.

Hall, Wilbur S.: *See*—
Leister, Harry M.; Donovan, Joseph C.; and Hall, Wilbur S., 4,357,372, Cl. 427-345.000.

Hama, Hideki; and Hishijima, Yoichi, to Sony Corporation. Magnetic tape loading apparatus. 4,357,639, Cl. 360-85.000.

Hamamura, Tamotu; Inoue, Nobuji; and Sato, Kazuo, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Aqueous emulsion of thermally reactive polyurethane composition. 4,357,441, Cl. 524-591.000.

Hamilton, Billy H.: *See*—
Andersen, Brad E.; Hamilton, Billy H.; and Schroeder, Robert E., 4,357,572, Cl. 323-286.000.

Hamilton, C. Ray; Mitchell, William O.; and Ellington, Gordon H., to Oxford Industries, Inc. Shoulder pad former. 4,356,744, Cl. 83-24.000.

Hammann, Ingeborg: *See*—
Heywang, Gerhard; Kuhle, Engelbert; Hammann, Ingeborg; and Homeyer, Bernhard, 4,357,329, Cl. 424-212.000.

Hammer, Klaus-Dieter: *See*—
Heinrich, Wolfgang; Bytzek, Max; Hammer, Klaus-Dieter; and Schroder, Martin, 4,357,371, Cl. 427-238.000.

Hammett, Dillard S., to SEDCO, Inc. Emergency evacuation system for offshore oil platform. 4,356,789, Cl. 114-365.000.

Hancor, Inc.: *See*—
Fouss, James L.; Parker, John J.; and Sting, Donald W., 4,357,190, Cl. 156-244.130.

Handrick, Kurt; and Kolling, Georg, to Bergwerksverband GmbH. Method for the production of hydrocarbon resins. 4,357,450, Cl. 526-76.000.

Haneishi, Yasuyuki: *See*—
Okura, Zenichi; Haneishi, Yasuyuki; and Kohmoto, Shinsuke, 4,357,089, Cl. 354-286.000.

Hanna, William L.: *See*—
Bendoni, Leonard V.; and Hanna, William L., 4,357,091, Cl. 354-304.000.

Hanotier, Jacques D.; and Dauby, Jacques F., to Labofina, S.A. Process for the production and the recovery of terephthalic acid. 4,357,475, Cl. 562-414.000.

Hansen, Rolf: *See*—
Lambregts, Antonius A.; and Hansen, Rolf, 4,357,661, Cl. 364-430.000.

Hanson, Donald H.: *See*—
Halgrimson, Darrell N.; Hanson, Donald H.; and King, Richard T., 4,356,850, Cl. 144-209.00R.

Hara, Takeshi: *See*—
Masuho, Yasuhiko; Umemoto, Naoji; Hara, Takeshi; and Hirai, Hidematsu, 4,357,273, Cl. 260-112.50R.

Harada, Chikao: *See*—
Uemura, Masahiro; Harada, Chikao; Sakurado, Kenichi; and Kakamu, Tsunehito, 4,356,827, Cl. 128-680.000.

Harada, Takeshi: *See*—
Sutoh, Shinji; Harada, Takeshi; and Kaneko, Shinichi, 4,356,705, Cl. 62-229.000.

Hardman, Carl C.; and Folser, George R., to Westinghouse Electric Corp. Energy efficient electrolyzer for the production of hydrogen. 4,357,224, Cl. 204-255.000.

Harkness, Travis O. Root grubbing plow. 4,356,644, Cl. 37-2.00R.

Harley, Howard D.: *See*—
Harley, Richard C.; and Harley, Howard D., 4,356,787, Cl. 114-292.000.

Harley, Richard C.; and Harley, Howard D. Float construction. 4,356,787, Cl. 114-292.000.

Harmsen, John L., to Stedef S.A. Railroad tie cover. 4,356,968, Cl. 238-1.000.

Harris Corporation: *See*—
Campbell, Roscoe, 4,357,008, Cl. 271-315.000.

Harris, Larry G.: *See*—
Coverstone, Don A.; and Harris, Larry G., 4,356,624, Cl. 29-611.000.

Harris, Thomas G., to Armstrong World Industries, Inc. Useful solutions of the tetramethylol derivative of 4,4'iso-propylidenediphenol. 4,357,457, Cl. 528-159.000.

Harsco Corporation: *See*—
Gallis, Anthony J.; and Ahluwalia, Prabh S., 4,356,993, Cl. 249-27.000.

Harthun, Norman E.: *See*—
Vosper, Ralph R.; and Harthun, Norman E., 4,356,970, Cl. 239-8.000.

Hartl, Wolfgang: *See*—
Nicklaus, Eberhard; Warncke, Heinz; Pross, Wilhelm; and Hartl, Wolfgang, 4,357,300, Cl. 422-62.000.

Hartman, Donn A.: *See*—
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., 4,357,359, Cl. 426-103.000.

Hartman, Susan E., to Eastman Kodak Company. Method of making a solid-state color imaging device having a color filter array using a photocrosslinkable barrier. 4,357,415, Cl. 430-293.000.

Hartmann, Hans-Joerg: *See*—
Vaeth, Guenter; Bachmann, Rudolf; Senkpiel, Werner; Hartmann, Hans-Joerg; Falk, Roland; and Motz, Herbert, 4,357,378, Cl. 428-64.000.

Hartmann, Heinrich; Hoffmann, Gerhard; and Lenz, Werner, to BASF Aktiengesellschaft. Laminate useful for the production of printing plates and relief plates. 4,357,414, Cl. 430-275.000.

Hartmann, Heinrich: *See*—
Lehner, August; Gimpel, Juergen; Buethe, Ingolf; Hartmann, Heinrich; and Schenck, Hans-Uwe, 4,357,221, Cl. 204-181.00R.

Hartry, Donald R., to Remo, Inc. Method of forming a non-tunable head. 4,356,756, Cl. 84-418.000.

Hartung, Willy, to Rockwool Aktiebolaget. Method and apparatus for collecting and handling mineral fibres. 4,357,154, Cl. 65-8.000.

Harvey, Kenneth; and Connors, Stephen T., to Colgate Palmolive Company. Rheologically desirable toothpaste. 4,357,313, Cl. 424-49.000.

Harvey, Kenneth: *See*—
Weyn, Hendrik F.; Baines, Eric; and Harvey, Kenneth, 4,357,317, Cl. 424-52.000.

Hasegawa, Takashi, to Ricoh Company, Ltd. Disc memory apparatus. 4,357,635, Cl. 360-51.000.

Hasegawa, Toshifumi: *See*—
Tomita, Tamaki; Munekata, Kenichi; Ohkoshi, Fumihiko; and Hasegawa, Toshifumi, 4,356,621, Cl. 29-568.000.

Haselswerdt, Vernon: *See*—
Mayfield, John M., Jr.; and Haselswerdt, Vernon, 4,356,833, Cl. 137-62.000.

Hasuo, Masayoshi: *See*—
Kakogawa, Genjiro; Hasuo, Masayoshi; Suga, Yoshinori; Kitada, Hisashi; and Uehara, Yumito, 4,357,452, Cl. 526-139.000.

Hatch, Randolph T.: *See*—
Kapiloff, Anita G.; and Hatch, Randolph T., 4,357,254, Cl. 252-181.000.

Hattori, Seiichi: *See*—
Imazeki, Ryoji; Hattori, Seiichi; and Mizuno, Yutaka, 4,357,604, Cl. 340-731.000.

Haug, Jurgen: *See*—
Goehlich, Lothar; and Haug, Jurgen, 4,357,487, Cl. 174-73.00R.

Haugen, Orville C., to Minnesota Mining and Manufacturing Company. Pressure rollers for toner fusing station. 4,356,764, Cl. 100-169.000.

Hauptman, Arthur, to Norton Company. Sealant strip. 4,356,676, Cl. 52-403.000.

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Bartlett, Allen J.; and Lewis, Robert M., 4,356,701, Cl. 62-55.500.

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McKibben, Gary E.; and Helseth, Mary Jo, 4,356,817, Cl. 128-127.000.

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Propst, Robert L.; Wodka, Michael A.; and Hodges, Ronald R., 4,356,674, Cl. 52-242.000.

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Mealing, Barrie E.; and Payne, Raymond H., 4,356,589, Cl. 15-320.000.

Hetherington, Brian L.; and Kelly, Peter Y., to Du Pont Canada Inc. Manufacture of plastic containers. 4,357,294, Cl. 264-294.000.

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Stefanski, Andrew; and Dorny, C. Nelson, 4,357,673, Cl. 364-582.000.

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Zweigle, Maurice L.; and Hickman, Janet C., 4,357,168, Cl. 106-171.000.

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Higuchi, Mitsuo, to Fujitsu Limited. Oscillation circuit with frequency dependent on incident light. 4,357,581, Cl. 331-66.000.

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Hinn, Werner, to RCA Corporation. SECAM Identification system. 4,357,623, Cl. 358-18.000.

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Masuho, Yasuhiko; Umemoto, Naoji; Hara, Takeshi; and Hirai, Hidematsu, 4,357,273, Cl. 260-112.50R.

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Takasa, Kenji; Hirakawa, Keizo; Nishimaru, Hiroji; and Honda, Makoto, 4,357,276, Cl. 260-319.100.

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Kasamatsu, Kiyoshi; Hirano, Masachika; and Okuno, Takeshi, 4,357,348, Cl. 424-300.000.

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Ikawa, Kazuo; Hirohata, Michio; Matsuda, Mutsuhide; and Mashimo, Yukio, 4,357,087, Cl. 354-33.000.

Hirose, Kenji: *See*—
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,357,569, Cl. 318-721.000.

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Taketomi, Chiaki; Miura, Tadao; Akiba, Keiji; and Hirose, Koji, 4,357,636, Cl. 360-62.000.

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Shimada, Fumio; and Hiruma, Kinu, 4,357,403, Cl. 430-18.000.

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Hama, Hideki; and Hishijima, Yoichi, 4,357,639, Cl. 360-85.000.

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Kousokabe, Hirokatu, 4,357,132, Cl. 418-55.000.
Saito, Shigeki; Koizumi, Osamu; and Kawamata, Syoichi, 4,357,565, Cl. 318-473.000.
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Shigematsu, Kazuo; Ojima, Masahiro; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,357,616, Cl. 346-135.100.

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Kuroda, Masao; Ono, Sekijyuro; Kondo, Toshio; and Ichikawa, Noriyoshi, 4,357,690, Cl. 367-8.700.

Ho, Shih-Ming; Yoldas, Bulent E.; and Mattox, Douglas M., to Westinghouse Electric Corp. Economic preparation of alumina suitable for isostatic pressing and sintering. 4,357,427, Cl. 501-153.000.

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Heinrich, Wolfgang; Bytzek, Max; Hammer, Klaus-Dieter; and Schroder, Martin, 4,357,371, Cl. 427-238.000.
Mondt, Josef; and Rinno, Helmut, 4,357,455, Cl. 528-73.000.
Quinkert, Gerhard; Weber, Wolf-Dietrich; and Schwartz, Ulrich, 4,357,278, Cl. 260-397.450.

Hoffman, David S.: *See*—
Rogers, Walter C., Jr.; and Hoffman, David S., 4,357,049, Cl. 297-75.000.

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Wilde, James D.; and Hoffman, Rolland L., 4,357,135, Cl. 432-11.000.

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Hartmann, Heinrich; Hoffmann, Gerhard; and Lenz, Werner, 4,357,414, Cl. 430-275.000.

Hofmann, Karl, to Robert Bosch GmbH. Fuel injection nozzle. 4,356,977, Cl. 239-533.900.

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Fedan, Jeffrey S.; O'Donnell, John P.; and Hogaboom, G. Kurt, 4,357,341, Cl. 424-273.00R.

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Peterson, Per V.; and Hoglund, Hans E., 4,357,208, Cl. 162-23.000.

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Baer, Ralph H.; Cope, Leonard D.; Holt, Oliver D.; and Morrison, Howard J., 4,357,014, Cl. 273-85.00G.

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Grabmaier, Christa; and Holzapfel, Heinz, 4,357,201, Cl. 156-603.000.

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Homeyer, Bernhard: *See*—
Heywang, Gerhard; Kuhle, Engelbert; Hammann, Ingeborg; and Homeyer, Bernhard, 4,357,329, Cl. 424-212.000.

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Kamiya, Tadashi, 4,356,877, Cl. 180-227.000.
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,356,717, Cl. 72-342.000.
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Watanabe, Masaki; Wakatsuki, Goroei; and Suzuki, Keiji, 4,356,876, Cl. 180-210.000.

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Takasa, Kenji; Hirakawa, Keizo; Nishimaru, Hiroji; and Honda, Makoto, 4,357,276, Cl. 260-319.100.

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Frederick, David C., 4,356,689, Cl. 57-102.000.

Hope, Stephen F.: *See*—
Hope, Henry F.; and Hope, Stephen F., 4,357,110, Cl. 366-132.000.

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Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Shigematsu, Kazuo; Ojima, Masahiro; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,357,616, Cl. 346-135.100.

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Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Dobhan, Herbert; and Horling, Peter, 4,357,056, Cl. 308-6.00C.

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Houben, Wilfried: *See*—
Trausch, Guenther; and Houben, Wilfried, 4,357,205, Cl. 156-656.000.

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Meadows, Frank N., 4,356,981, Cl. 241-16.000.

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Knighton, Mark S.; Fuller, Charles H.; Sims, Anson; Howden, Ashley G.; Kingsbury, L. C. James; and Jones, Lawrence T., 4,357,488, Cl. 179-1.0SC.

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Hunt, Robert P.; Geither, John D.; and Hrdlicka, Victor J., 4,357,538, Cl. 378-175.000.

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Sheibley, Dean W.; Rieker, Lorra L.; Hsu, Li-Chen; and Manzo, Michelle A., 4,357,402, Cl. 429-206.000.

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Reinchr, Dieter; Hugelin, Bernard; and Troxler, Eduard, 4,357,476, Cl. 564-509.000.

Huhn, Helmut; Karstens, Werner; and Hoppe, Lutz, to Wolff Walsrode AG. Process for the production of water-soluble hydrolyzed products of polyacrylonitrile polymers. 4,357,437, Cl. 524-458.000.

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Gee, Glen R., 4,356,790, Cl. 116-216.000.

Husslein, Julius; Rohrl, Franz; Nitzinger, Karl; and Gerl, Josef, to Bosch-Siemens Hausgerate GmbH. Baking oven. 4,357,522, Cl. 219-400.000.

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Thompson, Charles E., 4,356,844, Cl. 139-383.00A.

Hyland, Craig R., to Christensen, Inc. Downhole core barrel flushing system. 4,356,872, Cl. 175-58.000.

Ichikawa, Noriyoshi: *See*—
Kuroda, Masao; Ono, Sekijyuro; Kondo, Toshio; and Ichikawa, Noriyoshi, 4,357,690, Cl. 367-8.700.

ICI Americas Inc.: *See*—
Lynch, Matthew J., 4,357,314, Cl. 424-49.000.

Igashira, Toshihiko; Nomura, Ken; and Abe, Seiko, to Nippon Soken, Inc. Fuel evaporator. 4,356,804, Cl. 123-549.000.

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Yoshimaru, Tomohisa; and Iida, Kazuhiko, 4,357,638, Cl. 360-72.200.

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Ikenoue, Tsuneo; Liu, Shin-yng; Umemoto, Shuichi; and Arai, Naoki, to Ikenoue, Tsuneo; Tohoku Ricoh Co., Ltd.; Stanley Electric Co., Ltd.; and Micron Kiki Co., Ltd. DC—DC Converter. 4,357,654, Cl. 363-21.000.
Illinois Tool Works Inc.: *See*—
McVey, John K.; and Filipiak, Stanley E., 4,357,646, Cl. 361-288.000.
Olsen, Robert C.; and Weaver, William N., 4,356,914, Cl. 206-150.000.
Imai, Tamotsu, to UOP Inc. Production of alcohols. 4,357,479, Cl. 568-899.000.
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Bierhoff, Martinus P. M.; and Immink, Kornelis A., 4,357,696, Cl. 369-45.000.
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Howden, Martin E.; and Lansbury, Robert C., 4,357,383, Cl. 428-213.000.
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Smith, William C., 4,356,852, Cl. 145-61.00L.
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Yoshino, Eiichi; Ishikawa, Hidehiko; Inoue, Fumitaka; Takada, Masaki; and Misaki, Hideo, 4,357,425, Cl. 435-191.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,357,516, Cl. 219-69.00M.
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Kubo, Masayoshi; and Inoue, Kimio, 4,357,462, Cl. 528-357.000.
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Hamamura, Tamotu; Inoue, Nobuji; and Sato, Kazuo, 4,357,441, Cl. 524-591.000.
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Iwamatsu, Katsuyoshi; Inoue, Shigeharu; Miyauchi, Keinosuke; Kondo, Shinichi; Seki, Shigeo; and Yamada, Yujiro, 4,357,331, Cl. 424-246.000.
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Werner, Heinz-Helmut, 4,357,274, Cl. 260-123.700.
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Alvarez, Joseph A., III; Gobioff, Bruce D.; and West, Lynn F., 4,357,700, Cl. 370-83.000.
Benjamin, Charles E.; and Crawford, David J., 4,357,540, Cl. 250-491.100.
Bergeron, David L.; Fleming, Daniel J.; and Stephens, Geoffrey B., 4,357,178, Cl. 148-1.500.
Cade, Paul E., 4,356,730, Cl. 73-517.00R.
Caudill, Allison H.; and Bruce, William H., Jr., 4,357,093, Cl. 355-3.00R.
Davis, Gordon T., 4,357,678, Cl. 364-900.000.
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Hayes, Lawrence P., 4,357,006, Cl. 269-21.000.
Magdo, Ingrid E.; and Rupprecht, Hans S., 4,357,622, Cl. 357-44.000.
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Rutz, Richard F., 4,357,202, Cl. 156-635.000.
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Boden, Richard M.; and Geiger, John H., Jr., 4,357,247, Cl. 252-8.800.
Boden, Richard M., 4,357,315, Cl. 424-49.000.
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Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,357,246, Cl. 252-8.600.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,357,253, Cl. 252-174.110.
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,357,360, Cl. 426-538.000.
Sprecker, Mark A., 4,357,319, Cl. 424-84.000.
International Grating, Inc.: *See*—
Myers, Robert E., 4,357,292, Cl. 264-257.000.
International Harvester Co.: *See*—
Bauman, Jack L., 4,356,780, Cl. 111-85.000.
Kestian, Anthony M.; and Allori, Raymond J. (said Raymond J. Allori assors. to), 4,356,878, Cl. 180-235.000.
Zeitlow, Ronald A., 4,357,027, Cl. 280-5.00A.
International Standard Electric Corporation: *See*—
Mens Franciscus, Willy A.; and Van Dorst, Ludovicus, 4,357,007, Cl. 271-96.000.
Intres, Edward L.: *See*—
Van der Heijden, Wilhelmus F.; and Intres, Edward L., 4,357,607, Cl. 343-5.0VQ.
Investigacion Fic Fideicomiso: *See*—
Cardenas-Franco, Luis; and Sanches-Galindo, Gustavo A., 4,357,157, Cl. 65-164.000.
Garza, Elio M., 4,357,158, Cl. 65-225.000.
Iohara, Koh-ichi: *See*—
Kuroda, Toshimasa; Ishii, Seiji; Kumakawa, Shiro; and Iohara, Koh-ichi, 4,357,385, Cl. 428-229.000.
Ireland, Jack W. Resilient suction cup with soft pliable sealing gasket. 4,356,989, Cl. 248-206.00R.
Isaka, Kinichi: *See*—
Inohara, Akio; Sawae, Kiyoshi; Kawaguchi, Masashi; and Isaka, Kinichi, 4,357,557, Cl. 313-509.000.
Isaksson, Nils K.: *See*—
Avsan, Oleg; and Isaksson, Nils K., 4,357,679, Cl. 364-900.000.
Ishida, Atsushi: *See*—
Satoh, Eiji; Matsushita, Tetsuo; Ishida, Atsushi; Ishitobi, Tamio; and Muraoka, Shigemitsu, 4,357,389, Cl. 428-373.000.
Ishida, Hiroshi: *See*—
Sasaki, Koichi; Sumida, Yasuji; and Ishida, Hiroshi, 4,357,101, Cl. 355-75.000.
Ishihara, Osamu; Mori, Tetsurou; and Sawano, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Microstrip FET oscillator with dielectric resonator. 4,357,582, Cl. 331-96.000.
Ishii, Seiji: *See*—
Kuroda, Toshimasa; Ishii, Seiji; Kumakawa, Shiro; and Iohara, Koh-ichi, 4,357,385, Cl. 428-229.000.
Ishikawa, Hidehiko: *See*—
Yoshino, Eiichi; Ishikawa, Hidehiko; Inoue, Fumitaka; Takada, Masaki; and Misaki, Hideo, 4,357,425, Cl. 435-191.000.
Ishitobi, Tamio: *See*—
Satoh, Eiji; Matsushita, Tetsuo; Ishida, Atsushi; Ishitobi, Tamio; and Muraoka, Shigemitsu, 4,357,389, Cl. 428-373.000.
Ishkhanov, Evgeny S.: *See*—
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.
Ito, Rokuzo: *See*—
Yamada, Minoru; and Ito, Rokuzo, 4,356,846, Cl. 140-115.000.
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Kolobow, Theodor; and Ito, Yoichiro, 4,356,958, Cl. 233-27.000.
Ivancsics, Jozsef, to Dalmandi Allami Gazdasag. Soil sampling device. 4,356,734, Cl. 73-864.310.
Iwabuchi, Takeshi: *See*—
Tsubaki, Kazumi; Morinaga, Hiroshi; Matsuo, Yoshiho; and Iwabuchi, Takeshi, 4,357,448, Cl. 526-65.000.
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, to Kabushiki Kaisha Yaskawa Denki Seisakusho. Control device for a synchronous motor. 4,357,569, Cl. 318-721.000.
Iwamatsu, Katsuyoshi; Inoue, Shigeharu; Miyauchi, Keinosuke; Kondo, Shinichi; Seki, Shigeo; and Yamada, Yujiro, to Meiji Seika Kaisha, Ltd. 7αMethoxycephalosporin derivatives. 4,357,331, Cl. 424-246.000.
Iwasaki, Shinichiro, to Aisin Seiki Company, Limited. Temperature sensor. 4,357,114, Cl. 374-176.000.
Iwata, Shigemi: *See*—
Tamura, Koichi; Kajiyama, Ryuichi; and Iwata, Shigemi, 4,356,896, Cl. 187-29.00R.
Iwatani Sangyo Kabushiki Kaisha: *See*—
Kidowaki, Yoshimasa, 4,357,706, Cl. 373-104.000.
Izumi, Hiroshi: *See*—
Shirakawa, Takashi; and Izumi, Hiroshi, 4,356,607, Cl. 29-25.420.
Izumi, Masao, to Nissan Motor Company, Limited. Refrigerant compressor protective switch system. 4,356,704, Cl. 62-158.000.
Jackson, Leigh F.: *See*—
Kappenhagen, George A.; Martin, Niles J.; Pace, John E.; Sette, Robert A.; Randall, Charles E.; Jackson, Leigh F.; and Bains, Gurdip S., 4,356,895, Cl. 187-17.000.
Jackson, Richard R. Suction control. 4,356,823, Cl. 128-276.000.
Jacob, Jose T.: *See*—
Dobrez, John F.; and Jacob, Jose T., 4,357,243, Cl. 210-752.000.
Jacobs, Walter W.: *See*—
Butler, Michael B. N.; Jacobs, Walter W.; and Grant, Peter M., 4,357,709, Cl. 455-20.000.
Jagenberg Werke AG: *See*—
Weiss, Peter, 4,356,983, Cl. 242-75.400.
Jakobsson, Per A. H. Method for the production of building elements of the lightweight concrete type. 4,357,289, Cl. 264-42.000.

Jamshidi, Khosrow. Bone marrow aspiration needle. 4,356,828, Cl. 128-754.000.
Jan, Gerald: *See—*
Chylewski, Christoph; Jan, Gerald; Kurzen, Roland; Meier, Max; and Schellenberg, Matthias, 4,357,280, Cl. 260-465.00R.
Jansky, John: *See—*
Stofko, John, 4,357,194, Cl. 156-308.600.
Janssen, Wilbur: *See—*
Sandberg, Glenn A.; Janssen, Wilbur; and Bachmann, Duncan, 4,356,595, Cl. 17-45.000.
Jansson, Christian. Method of drying clothes and heating up laundry water and apparatus therefor. 4,356,640, Cl. 34-1.000.
Japan Servo Co.: *See—*
Ohno, Osamu, 4,357,563, Cl. 318-254.000.
Jasperson, F. Bon, to Northwood Mills, Ltd. Composite structures, new adhesive, and cement composition. 4,357,384, Cl. 428-215.000.
Jefferson, Donald E.: *See—*
Zucker, Jerry; Chivers, Carl E.; and Jefferson, Donald E., 4,357,436, Cl. 524-448.000.
Jeffery, Graham J.; and Adkins, Richard C., to Rolls-Royce Limited. Gas turbine engine combustion chambers. 4,356,693, Cl. 60-39.370.
Jenkins, Edwin E.: *See—*
Dwyer, Francis G.; and Jenkins, Edwin E., 4,357,233, Cl. 208-109.000.
Jenne, Richard, to Texas Instruments Incorporated. Glow plug duty cycle modulating apparatus. 4,357,525, Cl. 219-511.000.
Jenness, Robert V.: *See—*
Anderson, Thomas W.; Jenness, Robert V.; Milczarek, Richard J.; Schaefer, Edwin M., III; and Stekl, Robert M., 4,357,493, Cl. 179-6.040.
Jeter, John D.; and More, Henry S., to Exploration Logging, Inc. Method of making well logging apparatus. 4,356,629, Cl. 29-885.000.
JH Industries, Inc.: *See—*
Johnson, Dwight N., 4,356,574, Cl. 4-192.000.
Jikihara, Tomo: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; and Jikihara, Tomo, 4,357,466, Cl. 536-13.800.
Joanna Western Mills Company: *See—*
Holzer, Joseph C., 4,356,855, Cl. 160-178.00R.
Johann Wolf G.m.b.H.: *See—*
Lesslhumer, Josef, 4,356,687, Cl. 56-364.000.
Johannson, Richard J., to Towmotor Corporation. Load lifting carriage and mast assembly. 4,356,893, Cl. 187-9.00E.
Johansson, Jan-Allan Y.: *See—*
Holmberg, Krister; Johansson, Jan-Allan Y.; and Wallin, Gerd E., 4,357,454, Cl. 527-403.000.
John Fluke Mfg. Co., Inc.: *See—*
Everett, Stephen M., 4,357,062, Cl. 339-18.00R.
John Wyeth & Brother Limited: *See—*
Archibald, John L.; and Boyle, John T. A., 4,357,333, Cl. 424-258.000.
Johnsen, Ketil, executor: *See—*
Gundersen, George; Oien, Ewald; Eide, Ragnar; Wersland, Palmer; Borgersen, Kristian; Kloster, Paul, deceased; and Johnsen, Ketil, executor, 4,356,596, Cl. 17-58.000.
Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Method and apparatus using weighted range signal for controlling photographic functions. 4,357,083, Cl. 354-22.000.
Johnson, David W., Jr.; and Yan, Man F., to Bell Telephone Laboratories, Incorporated. Method of ceramic preparation. 4,357,251, Cl. 252-62.570.
Johnson, Dwight N., to JH Industries, Inc. Faucet assembly with pinch valves. 4,356,574, Cl. 4-192.000.
Johnson, Richard V., to Xerox Corporation. Method and apparatus for improving resolution of scophony scanning system utilizing carrier phase reversal. 4,357,627, Cl. 358-348.000.
Johnson, Thomas A., Jr. Card holder. 4,356,646, Cl. 40-16.400.
Johnson, Warren E., to Sherwood Tool, Incorporated. Container edge forming apparatus. 4,357,138, Cl. 493-159.000.
Jones, Addison B., to Rockwell International Corporation. High rate resist polymerization method. 4,357,364, Cl. 427-43.100.
Jones & Laughlin Steel Corporation: *See—*
Gerding, Charles C.; and Rechtorik, Stephen M., 4,357,125, Cl. 410-44.000.
Vajda, Stephen, 4,357,003, Cl. 266-158.000.
Jones, Lawrence T.: *See—*
Knighton, Mark S.; Fuller, Charles H.; Sims, Anson; Howden, Ashley G.; Kingsbury, L. C. James; and Jones, Lawrence T., 4,357,488, Cl. 179-1.0SC.
Ressmeyer, James; Marriott, Joe E.; and Jones, Lawrence T., 4,357,600, Cl. 340-347.0NT.
Jordan, Richard M., to Alcan Research and Development Limited. Production of rolled products. 4,356,618, Cl. 29-527.600.
Josef Kauferle KG Stahlbau: *See—*
Kauferle, Josef, deceased; and Lutzke, Werner, 4,356,614, Cl. 29-469.500.
Joseph, Joseph P.: *See—*
Nair, Vijay G.; Joseph, Joseph P.; and Bernstein, Seymour, 4,357,326, Cl. 424-180.000.
Joulin, Gerard. Bread and method for making same. 4,357,356, Cl. 426-19.000.
Jundt, Werner: *See—*
Bodig, Bernd; and Jundt, Werner, 4,356,808, Cl. 123-614.000.
Jungkman, David L., to Honeywell Inc. Chemically machined spectral grating. 4,357,204, Cl. 156-645.000.
Jurd, Leonard, to United States of America, Agriculture. Polybutylbenzylphenols and benzyl-3,4-methylenedioxybenzenes in insect population control. 4,357,344, Cl. 424-282.000.
Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,356,767, Cl. 101-295.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Oguchi, Yuhei, 4,357,116, Cl. 400-184.000.
Kabushiki Kaisha Yaskawa Denki Seisakusho: *See—*
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,357,569, Cl. 318-721.000.
Kado, Norio, to Diesel Kiki Co., Ltd. Heater unit for air conditioning system for automotive vehicles. 4,356,966, Cl. 237-12.30A.
Kahle, Henry; Menkes, Jeffrey R.; and Christensen, Dean L., to Memorex Corporation. Disc storage container. 4,356,918, Cl. 206-444.000.
Kai, Tohru: *See—*
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,357,569, Cl. 318-721.000.
Kaitani, Katsumi: *See—*
Tsuda, Masatoshi; Kobayashi, Takeshi; and Kaitani, Katsumi, 4,357,393, Cl. 428-547.000.
Kajiyama, Ryuichi: *See—*
Tamura, Koichi; Kajiyama, Ryuichi; and Iwata, Shigemi, 4,356,896, Cl. 187-29.00R.
Kakamu, Tsunehito: *See—*
Uemura, Masahiro; Harada, Chikao; Sakurado, Kenichi; and Kakamu, Tsunehito, 4,356,827, Cl. 128-680.000.
Kakogawa, Genjiro; Hasuo, Masayoshi; Suga, Yoshinori; Kitada, Hisashi; and Uehara, Yumito, to Mitsubishi Chemical Industries Limited. Process for polymerizing propylene. 4,357,452, Cl. 526-139.000.
Kalenda, Norman W., to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible 2-(2-pyridylazo)-4,5-bis(tertiary amino)phenol black dye-releasing compounds and precursors thereof. 4,357,411, Cl. 430-223.000.
Kalenda, Norman W.: *See—*
Anderson, Richard B.; and Kalenda, Norman W., 4,357,410, Cl. 430-223.000.
Anderson, Richard B.; and Kalenda, Norman W., 4,357,412, Cl. 430-223.000.
Kam, Lit-Yan; and Olsson, Billy E., to AMP Incorporated. Terminal for connection to a flat conductor. 4,357,065, Cl. 339-97.00R.
Kamerbeek, Evert M. H.: *See—*
Gerkema, Jan; and Kamerbeek, Evert M. H., 4,357,555, Cl. 378-135.000.
Kamin, Robert Y., to Kardon Industries, Inc. Method and apparatus for storing and dispensing fluid foodstuff. 4,356,935, Cl. 222-1.000.
Kamiya, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,356,877, Cl. 180-227.000.
Kaneko, Makoto: *See—*
Suzuki, Hideo; and Kaneko, Makoto, 4,356,752, Cl. 84-1.030.
Kaneko, Shinichi: *See—*
Sutoh, Shinji; Harada, Takeshi; and Kaneko, Shinichi, 4,356,705, Cl. 62-229.000.
Kaniecki, Thaddeus J.: *See—*
Buffington, Chester G.; Fang, Herbert H.; Friedfeld, Barry A.; Kaniecki, Thaddeus J.; Kennedy, John W.; Liu, Chong-tan; Sternberg, Morton; Feng, Henry H.; Chen, Paul Y.; Mukaddam, Waheed; and Narasimhan, Pattamadai E., 4,357,175, Cl. 134-10.000.
Kano, Hisaei, to Nissan Motor Co., Ltd. License plate holder. 4,357,650, Cl. 362-234.000.
Kapiloff, Anita G.; and Hatch, Randolph T., to Chemical Sciences, Inc. Cleaning composition. 4,357,254, Cl. 252-181.000.
Kappenhagen, George A.; Martin, Niles T.; Pace, John E.; Sette, Robert A.; Randall, Charles E.; Jackson, Leigh F.; and Bains, Gurdip S., to Westinghouse Electric Corp. Elevator system. 4,356,895, Cl. 187-17.000.
Karakawa, Takuro: *See—*
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,357,323, Cl. 424-180.000.
Karasawa, Yukinori, to Tokyo Kogaku Kikai Kabushiki Kaisha. Slit pattern projecting apparatus having alignment detecting means. 4,357,079, Cl. 351-7.000.
Kardon Industries, Inc.: *See—*
Kamin, Robert Y., 4,356,935, Cl. 222-1.000.
Karl, Rupert; Oexler, Rudolf; Schuller, Edmund; Braun, Erwin; Bock, Erick; and Schreyer, Franz, to Schubert & Salzer. Thread drawing-off device and method for the insertion of the drawn-off thread in an open-end spinning device. 4,356,691, Cl. 57-263.000.
Karl, Rupert; Mayer, Walter; Schuller, Edmund; and Braun, Erwin, to Schubert & Salzer. Method and apparatus for removing an irregularity in a thread. 4,356,692, Cl. 57-263.000.
Karl Schmidt GmbH: *See—*
Moebus, Horst, 4,356,800, Cl. 123-193.00P.
Karstens, Werner: *See—*
Huhn, Helmut; Karstens, Werner; and Hoppe, Lutz, 4,357,437, Cl. 524-458.000.
Kasamatsu, Kiyoshi; Hirano, Masachika; and Okuno, Takeshi, to Sumitomo Chemical Company, Limited. Insecticidal and/or acaricidal composition exhibiting low toxicity to mammals and fish. 4,357,348, Cl. 424-300.000.
Kaser, Franz: *See—*
Broghammer, Rudolf; and Kaser, Franz, 4,357,692, Cl. 368-75.000.
Kato, Shigeyoshi: *See—*
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,357,323, Cl. 424-180.000.

Kato, Shuichi; Kusakabe, Hiromi; Yamaguchi, Hiroyasu; and Yoshida, Yoshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Power amplifier. 4,357,579, Cl. 330-297.000.

Katsushige, Matsuzaki; Seiji, Narazaki; and Masanori, Kawaguchi, to Nippon Steel Corporation. Fuel combustion method and burner for furnace use. 4,357,134, Cl. 431-9.000.

Katsuta, Kihei: *See*—
Nakabayashi, Yasuyuki; Matsuno, Yoshiyuki; and Katsuta, Kihei, 4,356,982, Cl. 241-17.000.

Katuragi Sangyo Co., Ltd.: *See*—
Tsuda, Masatoshi; Kobayashi, Takeshi; and Kaitani, Katsumi, 4,357,393, Cl. 428-547.000.

Katz, Sol, to Strick Corporation. Trailer with unitary bottom rail-scuff plate. 4,357,047, Cl. 296-181.000.

Kauferle, Josef, deceased (by Kauferle, Viktoria, heiress and legal representative); and Lutzke, Werner, to Josef Kauferle KG Stahlbau. Method for the production of compound plates, particularly compound glass panes. 4,356,614, Cl. 29-469.500.

Kauferle, Viktoria, heiress and legal representative: *See*—
Kauferle, Josef, deceased; and Lutzke, Werner, 4,356,614, Cl. 29-469.500.

Kaufhold, Wolfgang: *See*—
Schmid, Eberhard; and Kaufhold, Wolfgang, 4,357,570, Cl. 323-210.000.

Kawaguchi, Masashi: *See*—
Inohara, Akio; Sawae, Kiyoshi; Kawaguchi, Masashi; and Isaka, Kinichi, 4,357,557, Cl. 313-509.000.

Kawai, Hisasi: *See*—
Tokura, Norihito; Kawai, Hisasi; and Morino, Seiji, 4,356,807, Cl. 123-606.000.

Kawakami, Yasushi, to Nissan Motor Company, Limited. Radio receiver. 4,357,712, Cl. 455-161.000.

Kawamata, Syoichi: *See*—
Saito, Shigeki; Koizumi, Osamu; and Kawamata, Syoichi, 4,357,565, Cl. 318-473.000.

Kawamoto, Toshiaki: *See*—
Shimazawa, Yoichi; and Kawamoto, Toshiaki, 4,357,617, Cl. 346-140.00R.

Kawata, Yukio; Obata, Tetsuo; Keino, Chouji; and Tayama, Isamu, to Mitsubishi Denki Kabushiki Kaisha. Microwave oven with a vertically translatable resistance heater or the like. 4,357,513, Cl. 219-10.55B.

Kayser, Steven J. Caulking gun with pressure release mechanism. 4,356,938, Cl. 222-327.000.

Kazushi, Azuma: *See*—
Yoshiharu, Kuwabara; and Kazushi, Azuma, 4,357,615, Cl. 346-134.000.

Kearney & Trecker Corporation: *See*—
Wollermann, Kenneth A., 4,356,609, Cl. 29-48.50R.

Kehoe, Gary; Puglia, Wayne J.; Witzel, Frank; Friello, Dominick R.; and Mackay, Donald A. M., to Nabisco Brands, Inc. Reduced calorie chewing gum. 4,357,354, Cl. 426-3.000.

Keino, Chouji: *See*—
Kawata, Yukio; Obata, Tetsuo; Keino, Chouji; and Tayama, Isamu, 4,357,513, Cl. 219-10.55B.

Kel-Lite Industries, Inc.: *See*—
Nelson, Norman C., 4,357,648, Cl. 362-183.000.

Kellet, William H.; and Mills, Peter S., to Coal Industry (Patents) Limited. Methods of stowing cavities with flowable materials. 4,357,167, Cl. 106-97.000.

Kellogg, Harlan F. Knockdown structure. 4,356,777, Cl. 108-111.000.

Kelly, Guy M.: *See*—
Roes, John B.; Kelly, Guy M.; Case, Robert F.; and Deming, Chandler R., 4,357,530, Cl. 235-384.000.

Kelly, Peter Y.: *See*—
Hetherington, Brian L.; and Kelly, Peter Y., 4,357,294, Cl. 264-294.000.

Kelly, Stephen M.: *See*—
Carr, Neil; Gray, George W.; and Kelly, Stephen M., 4,357,078, Cl. 350-350.00R.

Kennedy, Daniel M., III; and Kennedy, Patricia C. Flexible parking space barrier. 4,356,666, Cl. 49-35.000.

Kennedy, John H.: *See*—
Bunce, Roger A.; Kennedy, John H.; Kricka, Larry J.; and Whitehead, Thomas P., 4,356,722, Cl. 73-53.000.

Kennedy, John W.: *See*—
Buffington, Chester G.; Fang, Herbert H.; Friedfeld, Barry A.; Kaniecki, Thaddeus J.; Kennedy, John W.; Liu, Chong-tan; Sternberg, Morton; Feng, Henry H.; Chen, Paul Y.; Mukaddam, Waheed; and Narasimhan, Pattamadai E., 4,357,175, Cl. 134-10.000.

Kennedy, Patricia C.: *See*—
Kennedy, Daniel M., III; and Kennedy, Patricia C., 4,356,666, Cl. 49-35.000.

Kenyon, Dennis, to Dunlop Limited. Vehicle suspensions. 4,357,032, Cl. 280-681.000.

Kerey, Gyorgy: *See*—
Takacs, Istvan; Feimeri, Jozsef; Kerey, Gyorgy; Rudolf, Peter; Banos, Zoltan; Vereczkey, Endre; and Bosits, Gyula, 4,357,306, Cl. 422-254.000.

Kern, Eckhart; Collonia, Harald; and Groh, Herbert-Hans, to VDO Adolf Schindling AG. Valve system for regulating the idling speed of Otto engines, particularly automobile engines. 4,356,802, Cl. 123-339.000.

Kernforschungsanlage Julich GmbH: *See*—
Holzapfel, Christian, 4,356,830, Cl. 134-152.000.

Kester, Adelbert L.; and Spector, George. Non-slip footwear. 4,356,643, Cl. 36-59.00C.

Kestian, Anthony M.; and Allori, Raymond J., to International Harvester Co., by said Raymond J. Allori. Articulated tractor power train. 4,356,878, Cl. 180-235.000.

Khandros, Igor Y., to Abex Corporation. Centrifugal casting. 4,357,394, Cl. 428-595.000.

Kibata, Shiro: *See*—
Mizuno, Toshio; and Kibata, Shiro, 4,356,710, Cl. 66-196.000.

Kidd, Arthur H.; and Petersen, Burdette A., to H. G. Weber & Co., Inc. Infeed counting conveyor. 4,357,126, Cl. 414-46.000.

Kidowaki, Yoshimasa, to Iwatani Sangyo Kabushiki Kaisha. Arc generating electric system for a metal casting apparatus. 4,357,706, Cl. 373-104.000.

Kiefer, Joseph H.; and Smith, Danny J., to United States of America, Energy. Manual tube-to-tubesheet welding torch. 4,357,515, Cl. 219-60.200.

Kilichowski, Kurt B.; and Pampalone, Thomas R., to RCA Corporation. Method of plasma etching a substrate. 4,357,369, Cl. 427-90.000.

Killip, Graham R.: *See*—
Brown, Carole E.; Ball, Dean M.; Killip, Graham R.; and Olivier, James P., 4,356,727, Cl. 73-243.000.

Killis, Andreas: *See*—
Andre, Jean D.; Killis, Andreas; Le Nest, Jean-Francois; and Cheradame, Herve M., 4,357,401, Cl. 429-192.000.

Kimbrough, Laurence B., to RCA Corporation. Holding and notching tool for CRT implosion protection. 4,356,845, Cl. 140-93.200.

Kimura, Kazuo, to Minolta Camera Kabushiki Kaisha. Exposure control device for cameras. 4,357,084, Cl. 354-24.000.

Kimura, Shigeru, to Nifco Inc. Plastic fastener. 4,356,601, Cl. 24-297.000.

Kinford, Harold G., Jr. Method and apparatus for reducing air drag on truck type wheeled vehicles. 4,357,045, Cl. 296-1.00S.

King, Richard T.: *See*—
Halgrimson, Darrell N.; Hanson, Donald H.; and King, Richard T., 4,356,850, Cl. 144-209.00R.

Kingsbury, L. C. James: *See*—
Knighton, Mark S.; Fuller, Charles H.; Sims, Anson; Howden, Ashley G.; Kingsbury, L. C. James; and Jones, Lawrence T., 4,357,488, Cl. 179-1.0SC.

Kingston, Samuel C.; and Ehresman, Virgil A., to Sperry Corporation. Waveform encoded altitude sensor. 4,357,610, Cl. 343-12.00A.

Kipchakvaev, Alexandr D.: *See*—
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.

Kiproff, Peter N.: *See*—
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Knight, Lindsay C., to Australasian Training Aids, Pty., Ltd. Physical hit detection system and target apparatus. 4,357,531, Cl. 235-400.000.
Knighton, Mark S.; Fuller, Charles H.; Sims, Anson; Howden, Ashley G.; Kingsbury, L. C. James; and Jones, Lawrence T., to California R & D Center. Voice discriminating system. 4,357,488, Cl. 179-1.0SC.
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Chen, Gilbert K.; Nyberg, Paul M.; and Buchholz, Matthew, 4,356,611, Cl. 29-157.00R.
Koechner, Walter, to Science Applications, Inc. Disc or slab laser apparatus employing compound parabolic concentrator. 4,357,704, Cl. 372-72.000.
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Anderka, Gerold, 4,356,632, Cl. 33-18.00R.
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Grigoleit, Georg; Matern, Kurt; Kohler, Helmut; and Collin, Gerd, 4,357,472, Cl. 549-49.000.
Kohlmeier, Wilfried: *See*—
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Okura, Zenichi; Haneishi, Yasuyuki; and Kohmoto, Shinsuke, 4,357,089, Cl. 354-286.000.
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Koizumi, Osamu: *See*—
Saito, Shigeki; Koizumi, Osamu; and Kawamata, Syoichi, 4,357,565, Cl. 318-473.000.
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Ikeda, Yoshikazu; and Wakahara, Yasushi, 4,357,674, Cl. 364-768.000.
Kolling, Georg: *See*—
Handrick, Kurt; and Kolling, Georg, 4,357,450, Cl. 526-76.000.
Kolobow, Theodor; and Ito, Yoichiro, to United States of America, Health and Human Services. Blood cell separator. 4,356,958, Cl. 233-27.000.
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Haddad, Theodore A.; Kondig, Walter; and Phillips, Richard A., 4,357,295, Cl. 264-341.000.
Kondo, Shinichi: *See*—
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Matsushima, Tetsuo; Kondow, Ryotaro; and Matsuzawa, Kunio, 4,357,666, Cl. 364-492.000.
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Endo, Koichi, 4,357,098, Cl. 355-15.000.
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Nagoshi, Mitsuru, 4,357,092, Cl. 355-3.0TR.
Shimada, Fumio; and Hiruma, Kinu, 4,357,403, Cl. 430-18.000.
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Turnbull, William S.; and Pugh, Gary W., 4,356,835, Cl. 137-117.000.
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Kopse, Odon: *See*—
Ehlen, Ewald; and Kopse, Odon, 4,356,976, Cl. 239-533.500.
Korff William W., to Butler Manufacturing Company. Programmable electronic real-time load controller providing demand limit control. 4,357,665, Cl. 364-492.000.
Koshimizu, Naganori; and Shiiya, Koichi, to Tokico Ltd. Master cylinder having a fluid pressure control valve mechanism. 4,356,694, Cl. 60-562.000.
Kouchi, Toshihiro; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Developer for electrophotography and process for preparation thereof. 4,357,406, Cl. 430-137.000.
Kousokabe, Hirokatu, to Hitachi, Ltd. Hermetic scroll fluid discharge apparatus with pressurized fluid passage in wrap. 4,357,132, Cl. 418-55.000.
Kovacs, Michael J. Christmas light frame. 4,357,653, Cl. 362-388.000.
Koverya, Vladimir M.: *See*—
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.
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Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with 1-phenyl-1-oximino-2-(1,2,4-triazol-1-yl)-ethanes. 4,357,338, Cl. 424-269.000.
Kraska, Allen R.; and Lombardino, Joseph G., to Pfizer Inc. Substituted piperazines having immune regulant activity. 4,357,332, Cl. 424-250.000.
Krasselt, Manfred M.: *See*—
Apontoweil, Peter; and Krasselt, Manfred M., 4,357,320, Cl. 424-89.000.
Krauss, Rudolf, to Robert Bosch GmbH. Fuel injection valve and a method for manufacturing a fuel injection valve. 4,356,978, Cl. 239-533.120.
Krauss, Rudolf, to Robert Bosch GmbH. Electromagnetically actuatable valve. 4,356,980, Cl. 239-585.000.
Kricka, Larry J.: *See*—
Bunce, Roger A.; Kennedy, John H.; Kricka, Larry J.; and Whitehead, Thomas P., 4,356,722, Cl. 73-53.000.
Kroll, Arthur S., to Eastman Kodak Company. Electrographic apparatus and method featuring compressed-field, magnetic brush development. 4,357,103, Cl. 355-3.0DD.
Krueger, Robert H., to Borg-Warner Corporation. Automatic addition of a corrosion inhibitor to a coolant system by osmotic pressure. 4,357,236, Cl. 210-167.000.
Krug, Willi: *See*—
Babel, Werner; and Krug, Willi, 4,356,620, Cl. 29-568.000.
Kubo, Kenji; and Moriya, Makoto, to Nissan Motor Company, Limited. Tiltable pedal apparatus. 4,356,740, Cl. 74-560.000.
Kubo, Masayoshi; and Inoue, Kimio, to Daicel Chemical Industries, Ltd. Process for producing lactone high polymers. 4,357,462, Cl. 528-357.000.
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Transmission control system providing overlapped shift line combinations. 4,356,742, Cl. 74-869.000.
Kubota, Hitoshi; and Takahashi, Toshiyuki, to Nissan Motor Co., Ltd.; and Nippon Air Brake Co., Ltd. Fluid level detector. 4,356,729, Cl. 73-308.000.
Kubota, Tetsumaru, to Olympus Optical Co., Ltd. Stabbing apparatus for diagnosis of living body. 4,356,826, Cl. 128-630.000.
Kuehn, Christa G.; and Leder, Frederic, to Occidental Research Corporation. Three compartment electrolytic cell method for producing hydrogen peroxide. 4,357,217, Cl. 204-84.000.
Kuhle, Engelbert: *See*—
Heywang, Gerhard; Kuhle, Engelbert; Hammann, Ingeborg; and Homeyer, Bernhard, 4,357,329, Cl. 424-212.000.
Kuhlmann, Horst: *See*—
Wackerbarth, Folkard; Halbherr, Gerd; and Kuhlmann, Horst, 4,357,211, Cl. 202-111.000.
Kuhn, Lothar, to Adlerwerke vorm. Heinrich Kleyer. Business machine frame to housing connection. 4,357,060, Cl. 312-351.000.
Kuhnlein, Hans; Kung, Hans R.; and Molnar, Georg, to Bertrams AG. Process and apparatus for the concentration of an alkaline solution. 4,357,206, Cl. 159-13.00A.
Kuilman, Bartel: *See*—
Appel, Cornelis; and Kuilman, Bartel, 4,356,865, Cl. 166-153.000.
Kumakawa, Shiro: *See*—
Kuroda, Toshimasa; Ishii, Seiji; Kumakawa, Shiro; and Iohara, Koh-ichi, 4,357,385, Cl. 428-229.000.
Kung, Hans R.: *See*—
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Kuramochi, Koujiro: *See*—
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Kuriki, Choei: *See*—
Utsunomiya, Kimitake; Yamada, Hisafumi; and Kuriki, Choei, 4,357,631, Cl. 358-167.000.
Kuriki, Minoru: *See*—
Takeuchi, Minami; and Kuriki, Minoru, 4,357,621, Cl. 357-39.000.
Kuroda, Masao; Ono, Sekijyuro; Kondo, Toshio; and Ichikawa, Noriyoshi, to Hitachi Medical Corporation. Switch circuit for exciting ultrasonic transducer elements. 4,357,690, Cl. 367-8.700.
Kuroda, Muneo: *See*—
Taguchi, Katsumi; Nishioka, Yuji; and Kuroda, Muneo, 4,357,099, Cl. 355-46.000.
Kuroda, Toshimasa; Ishii, Seiji; Kumakawa, Shiro; and Iohara, Kohichi, to Teijin Limited. Filamentary yarn useful for the weft component of a tire cord fabric and a tire cord fabric including such a yarn. 4,357,385, Cl. 428-229.000.
Kurtz, Thomas D. Showcase lock for sliding doors. 4,356,580, Cl. 70-14.000.
Kurzen, Roland: *See*—
Chylewski, Christoph; Jan, Gerald; Kurzen, Roland; Meier, Max; and Schellenberg, Matthias, 4,357,280, Cl. 260-465.00R.
Kusakabe, Hiromi: *See*—
Kato, Shuichi; Kusakabe, Hiromi; Yamaguchi, Hiroyasu; and Yoshida, Yoshihiro, 4,357,579, Cl. 330-297.000.
Kuttel, Brian W., to TransFRESH Corporation. Transportation of perishable products. 4,356,702, Cl. 62-62.000.
Kyoto Ceramic Kabushiki Kaisha: *See*—
Yamamoto, Shigeyoshi; Sagawa, Nobukazu; and Nakanishi, Noriyoshi, 4,357,526, Cl. 219-544.000.
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Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,356,742, Cl. 74-869.000.
La Telemecanique Electrique: *See*—
Bouteille, Daniel, 4,356,760, Cl. 91-445.000.
Labaune, Camille; and Leconte, Gilles, to Regie Nationale des Usines Renault. Electromechanical arrangement for automatic return of electronic blinker located on the steering column of a motor vehicle. 4,357,507, Cl. 200-61.270.
Labbe, Jacques; and Bernollin, Roland, to Les Cables de Lyons. Connector for a coaxial cable. 4,357,067, Cl. 339-177.00R.
Labofina, S.A.: *See*—
Hanotier, Jacques D.; and Dauby, Jacques F., 4,357,475, Cl. 562-414.000.
LaCroix, Eugene F. Shock mounting for laser. 4,357,649, Cl. 362-217.000.
Lalanne, Andre P., to Societe Anonyme Automobiles Citroen; and Automobiles Peugeot. Retractable vehicle storage shelf arrangement. 4,357,046, Cl. 296-37.160.
Lamarque, Gabriel, to Heurtey Metallurgie. Ladle steel treatment system including three-part electrode casing. 4,357,485, Cl. 373-95.000.
Lambert, John B.; and Schussler, Mortimer, to Fansteel Inc. Coated cemented carbide bodies. 4,357,382, Cl. 428-212.000.
Lamberts, Robert L.; and Varner, Jerry R., to Eastman Kodak Company. Light valve imaging apparatus having enlarged pixel exposing regions. 4,357,625, Cl. 358-75.000.
Lambregts, Antonius A.; and Hansen, Rolf, to Boeing Company, The. Aircraft landing control system. 4,357,661, Cl. 364-430.000.
La Mori, Phillip N.; and Zahradnik, Raymond L., to Occidental Research Corporation. Use of geothermal heat to recover alcohol and other valuable products. 4,357,214, Cl. 203-100.000.
Landi, Vincent R.; and Dalton, Jeffrey L., to Rogers Corporation. Molding compound. 4,357,269, Cl. 523-206.000.
Lange, Fritz W.: *See*—
Orth, Winfried; Lange, Fritz W.; and Fickert, Werner, 4,357,277, Cl. 260-326.250.
Langen, Christianus P. Meat curing machine. 4,356,762, Cl. 99-533.000.
Langer, Robert S., Jr.: *See*—
Hsieh, Dean S. T.; and Langer, Robert S., Jr., 4,357,312, Cl. 424-15.000.
Langill, Addison W., Jr.: *See*—
Friedland, Harry; and Langill, Addison W., Jr., 4,356,840, Cl. 137-487.500.
Lanier Business Products, Inc.: *See*—
Bolick, Fred C., Jr., 4,357,642, Cl. 360-132.000.
Lansbury, Robert C.: *See*—
Howden, Martin E.; and Lansbury, Robert C., 4,357,383, Cl. 428-213.000.
Large, Donald M., to Western Electric Co., Inc. Removing magnetic articles from a carrier. 4,356,905, Cl. 198-366.000.
Larson, Roderick W.; and Reidt, Dean K., to Minnesota Mining and Manufacturing Company. Stackable flat cable clamp. 4,356,599, Cl. 24-16.0PB.
Lassau, Christian: *See*—
Hillion, Gerard; and Lassau, Christian, 4,357,478, Cl. 568-816.000.
Laurel Bank Machine Co., Ltd.: *See*—
Furuya, Katusuke, 4,356,829, Cl. 133-8.00R.
Lawson, Dale W. R., to Rohr Industries, Inc. Thrust reverser geared linkage. 4,356,973, Cl. 239-265.310.
Lawson, Jimmie B.: *See*—
Berkshire, David C.; Lawson, Jimmie B.; and Richardson, Edwin A., 4,357,248, Cl. 252-8.55B.
Lesch, John G.; and Carroll, James J., to General Electric Company. High voltage fuse for interrupting a wide range of currents and especially suited for low current interruption. 4,357,588, Cl. 337-160.000.
Lear Siegler, Inc.: *See*—
Bourke, Robert P., 4,357,005, Cl. 267-144.000.
Leconte, Gilles: *See*—
Labaune, Camille; and Leconte, Gilles, 4,357,507, Cl. 200-61.270.
Leder, Frederic: *See*—
Kuehn, Christa G.; and Leder, Frederic, 4,357,217, Cl. 204-84.000.
Lee, Bert, to Metron Logging, Inc. Inertia actuated antidive system for vehicle. 4,357,033, Cl. 280-703.000.
Lee, David. Curvilinear solar energy collector. 4,356,814, Cl. 126-440.000.
Lee, Pang-Kai: *See*—
Hickam, William M.; Lee, Pang-Kai; and Lindsay, William T., Jr., 4,357,576, Cl. 324-450.000.
Lee, Tommy C.: *See*—
Wolters, Richard A., Jr.; Lee, Tommy C.; and Matzner, Bruce, 4,357,298, Cl. 376-441.000.
Le Fur, Gerard R.: *See*—
Dubroeucq, Marie-Christine; Gueremy, Claude G. A.; Renault, Christian L. A.; and Le Fur, Gerard R., 4,357,337, Cl. 424-267.000.
Legler, John G.; and Bartlett, Robert L., to Benchmark Tool Company. Band saw tension and tracking assembly. 4,356,750, Cl. 83-816.000.
Le Grand, Yves; and Migeon, Rene, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Remote power supply system for equipment on a transmission line. 4,357,545, Cl. 307-64.000.
Legris: *See*—
Legris, Andre, 4,356,936, Cl. 222-5.000.
Legris, Andre, to Legris. Remote-controlled valves functioning by percussion. 4,356,936, Cl. 222-5.000.
Lehner, August; Gimpel, Juergen; Buethe, Ingolf; Hartmann, Heinrich; and Schenck, Hans-Uwe, to BASF Aktiengesellschaft. Process for coating electrically conductive objects with polyurethane. 4,357,221, Cl. 204-181.00R.
Leiber, Heinz, to Robert Bosch GmbH. Anti-skid control system. 4,357,054, Cl. 303-10.000.
Leiber, Heinz; and Mergenthaler, Robert, to Robert Bosch GmbH. Hydraulic brake force amplifier. 4,357,055, Cl. 303-52.000.
Leichter, Louis M.; Stofko, John J., Jr.; and Sonnonstine, Terry J., to Minnesota Mining and Manufacturing Company. Fluorinated dye sensitized organic electron donor compound. 4,357,405, Cl. 430-58.000.
Leister, Harry M.; Donovan, Joseph C.; and Hall, Wilbur S., to Amchem Products, Inc. Control of autodeposition baths. 4,357,372, Cl. 427-345.000.
LeMay, Dan B. Vapor feed regulator. 4,356,834, Cl. 137-89.000.
Lemelson, Jerome H.; and Grund, Christian. Parking meter. 4,356,903, Cl. 194-1.00R.
Lemelson, Jerome H. Fire detection and warning system. 4,357,602, Cl. 340-539.000.
Le Nest, Jean-Francois: *See*—
Andre, Jean D.; Killis, Andreas; Le Nest, Jean-Francois; and Cheradame, Herve M., 4,357,401, Cl. 429-192.000.
Lenz, Werner: *See*—
Hartmann, Heinrich; Hoffmann, Gerhard; and Lenz, Werner, 4,357,414, Cl. 430-275.000.
Lepori, Agostino: *See*—
Pippa, Roberto; De Toffol, Andrea; Lepori, Agostino; and Mara, Luigi, 4,357,270, Cl. 523-335.000.
Les Cables de Lyons: *See*—
Labbe, Jacques; and Bernollin, Roland, 4,357,067, Cl. 339-177.00R.
Lessig, William R., III, to Black & Decker Inc. Cutting mechanism for a grass cutting machine. 4,356,686, Cl. 56-295.000.
Lesslhumer, Josef, to Johann Wolf G.m.b.H. Loading equipment for agricultural bulk goods. 4,356,687, Cl. 56-364.000.
Lester Engineering Company: *See*—
Ansorge, Al, 4,356,940, Cl. 222-596.000.
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Andre, Jean D.; Killis, Andreas; Le Nest, Jean-Francois; and Cheradame, Herve M., 4,357,401, Cl. 429-192.000.
Leuchtmann, Guenter: *See*—
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,356,604, Cl. 28-255.000.
Leung, Chun-Keung: *See*—
Schira, John J.; and Leung, Chun-Keung, 4,357,662, Cl. 364-431.080.
Leuschke, Christian: *See*—
Alberts, Heinrich; Fischer, Winfried; Muller, Friedemann; Peters, Horst; Leuschke, Christian; and Baasch, Hans-Peter, 4,357,267, Cl. 524-40.000.
Le Van, Tiu: *See*—
Daaboul, Fouad; and Le Van, Tiu, 4,357,491, Cl. 179-1.0SP.
Leveling Devices, Inc.: *See*—
McKenna, William F.; and Cwienkala, Gerry A., 4,356,638, Cl. 33-333.000.
Leveque, Robert, to Creusot-Loire. Chromization of steels by gas process. 4,357,182, Cl. 148-6.350.
Lever Brothers Company: *See*—
Cox, Roger B.; and Steer, David C., 4,357,423, Cl. 435-101.000.
Leverett, Peter J. Flooring system. 4,356,792, Cl. 119-28.000.
Levine, Michael R. Thermostat with adaptive operating cycle. 4,356,962, Cl. 236-11.000.

Lewis, Bernard L., to United States of America, Navy. Scanning radar system. 4,357,608, Cl. 343-5.0SW.
Lewis, Robert M.: *See—*
Bartlett, Allen J.; and Lewis, Robert M., 4,356,701, Cl. 62-55.500.
Lewis, Sheldon N.; and Haggard, Richard A., to Rohm and Haas Company. Novel polymers of alkyl methacrylates. 4,357,435, Cl. 524-239.000.
Lewis, Stephen J.: *See—*
Schall, Roy F., Jr.; and Lewis, Stephen J., 4,357,142, Cl. 23-230.00B.
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, to General Electric Company. Transfer lamination of vapor deposited foils, method and product. 4,357,395, Cl. 428-607.000.
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Lindsay, William T., Jr.: *See—*
Hickam, William M.; Lee, Pang-Kai; and Lindsay, William T., Jr., 4,357,576, Cl. 324-450.000.
Lindstrom, Bror A. O.: *See—*
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Liquid Carbonic Corporation: *See—*
Tyree, Lewis, Jr.; Missig, James R.; and Rhoades, George D. (said James R. Missig and George D. Rhoades assors. to), 4,356,707, Cl. 62-381.000.
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Litschko, Hans G.: *See—*
Trekel, Rainer; Lorenzen, Uwe; Rehme, Wolfgang; Durr, Rolf; Litschko, Hans G.; and Thiele, Wilfried, 4,356,654, Cl. 43-9.000.
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Eckels, Phillip W.; Litz, Donald C.; and Patterson, Adolphus, 4,356,700, Cl. 62-55.000.
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Mayer, Herbert E.; and Lobach, Ernst W., 4,357,100, Cl. 355-62.000.
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Kraska, Allen R.; and Lombardino, Joseph G., 4,357,332, Cl. 424-250.000.
Loncrini, Donald F.: *See—*
Haag, Thomas E.; Freebersyser, Steven R.; and Loncrini, Donald F., 4,357,258, Cl. 252-312.000.
Long, Walter D. Commercial multicompartment mail message unit. 4,356,956, Cl. 232-24.000.
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Loo, Billy W., to United States of America, Energy. Coal gasification vessel. 4,357,305, Cl. 422-241.000.
Lopez, John A.; and Uzelmeier, Christopher W., to Shell Oil Company. Low viscosity vinyl ester resins. 4,357,456, Cl. 528-111.500.
L'Oreal: *See—*
Grollier, Jean-Francois; Monnais, Christian; and Peritz, Lyonel, 4,357,141, Cl. 8-406.000.
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Lotze, Walter: *See—*
Kramer, Ludwig; Franz, Otto; and Lotze, Walter, 4,357,710, Cl. 455-76.000.
Lowell, Benjamin W. Floor speaker. 4,356,881, Cl. 181-150.000.
Lubrizol Corporation, The: *See—*
Hayashi, Katsumi, 4,357,250, Cl. 252-51.50A.
Lucas Meyer GmbH & Co.: *See—*
Strauss, Kuno; and Nasner, Alice, 4,357,353, Cl. 424-365.000.
Lucek, John W., to Norton Company. Electrolphoretic casting process. 4,357,222, Cl. 204-181.00F.
Luciano, William A.; and Yook, Steven S. W., to Albany International Corp. Papermakers felt and method of manufacture. 4,357,386, Cl. 428-234.000.
Lude, Ernst, to Rommag P. Worwag & Co. Vacuum cleaner. 4,356,591, Cl. 15-326.000.
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Schopf, Hans-Joachim; and Lug, Dietmar, 4,356,741, Cl. 74-595.000.
Lui, Alfred S. T.: *See—*
Carney, Robert L.; and Lui, Alfred S. T., 4,357,474, Cl. 556-482.000.
Lunaire Environmental, Inc.: *See—*
Lunick, Harold L., 4,356,967, Cl. 237-14.000.
Lunder, Tito L.; and Nielsen, Corine M., to Societe d'Assistance Technique pour Produits Nestle S.A. Cold soluble tea. 4,357,361, Cl. 426-597.000.
Lunick, Harold L., to Lunaire Environmental, Inc. Laboratory incubator chamber system. 4,356,967, Cl. 237-14.000.
Luttig, Dale. Self-propelled ballast dispensing machine. 4,357,129, Cl. 414-346.000.
Lutzke, Werner: *See—*
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Lyall Electric, Inc.: *See—*
Coverstone, Don A.; and Harris, Larry G., 4,356,624, Cl. 29-611.000.
Lynch, Hugh C. Safety valve support. 4,356,986, Cl. 248-57.000.
Lynch, Matthew J., to ICI Americas Inc. Maltitol containing toothpaste. 4,357,314, Cl. 424-49.000.
Lynchak, Kima A.: *See—*
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,356,766, Cl. 101-232.000.
M & B Headwear Co., Inc.: *See—*
Van Bryant, Edward, Jr., 4,357,020, Cl. 273-424.000.
MacDonald, Ian B. Concrete curb cutter. 4,357,120, Cl. 404-83.000.
Machida, Nobuo: *See—*
Nishimoto, Koji; Higuchi, Kenji; Oki, Toshiyuki; and Machida, Nobuo, 4,357,512, Cl. 219-8.500.
Machinery Welder Manufacturing Corp.: *See—*
Meyer, Gilbert F., 4,357,518, Cl. 219-130.100.
Macias, Helene; and Winke, Angos. Diaper with moisture detecting apparatus. 4,356,818, Cl. 128-138.00A.
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Kehoe, Gary; Puglia, Wayne J.; Witzel, Frank; Friello, Dominick R.; and Mackay, Donald A. M., 4,357,354, Cl. 426-3.000.
MacKnight, William J.: *See—*
Farris, Richard J., 4,357,041, Cl. 293-136.000.
MacMillan, Robert E., to Ex-Cell-O Corporation. Motor assembly. 4,357,552, Cl. 310-90.000.
MacMurtrie, Edward D.: *See—*
Alverson, Frederick C.; MacMurtrie, Edward D.; and Odell, Norman R., 4,357,669, Cl. 364-500.000.
MacPherson, Douglas: *See—*
Ayoub, Stephen J.; MacPherson, Douglas; and Rizzo, Thomas, 4,356,724, Cl. 73-118.000.
Mactavish Machine Manufacturing Co.: *See—*
Gooden, Eldon D.; and Reed, James P., 4,357,128, Cl. 414-156.000.
Madsen, David C.; and Tucker, Hugh N., to Baxter Travenol Laboratories, Inc. Nutritional composition for management of renal failure. 4,357,343, Cl. 424-274.000.
Magdo, Ingrid E.; and Rupprecht, Hans S., to International Business Machines Corporation. Complementary transistor structure. 4,357,622, Cl. 357-44.000.
Mager, Louis: *See—*
Rosenthal, Perry; and Mager, Louis, 4,357,173, Cl. 134-6.000.
Magrucci, Aldo: *See—*
Daniele, Vincenzo; Corda, Giuseppe; Magrucci, Aldo; and Torelli, Guido, 4,357,685, Cl. 365-189.000.
Maho Werkzeugmaschinenbau Babel & Co.: *See—*
Babel, Werner; and Krug, Willi, 4,356,620, Cl. 29-568.000.
Mahony, John E., to General Electric Company. Method and means for generating time gain compensation control signal for use in ultrasonic scanner and the like. 4,356,731, Cl. 73-631.000.
Main, W. Eric: *See—*
Espe, Roy H.; and Main, W. Eric, 4,357,547, Cl. 307-272.00A.
Makino, Osamu. Bending tool. 4,356,718, Cl. 72-389.000.
Malachowski, Frank, to Alcan Aluminum Corporation. Tilt latch for slidable window sash. 4,356,667, Cl. 49-454.000.
Mallinckrodt, Inc.: *See—*
Haag, Thomas E.; Freebersyser, Steven R.; and Loncrini, Donald F., 4,357,258, Cl. 252-312.000.
Mancini, Derek V., to Consumers Glass Company Limited. Counting mechanism for creamer filling machine. 4,356,682, Cl. 53-443.000.
Mankel, Siegfried; Ostertag, Klaus; and Schreyer, Heinz, to Erwin Sick GmbH, Optik-Elektronic. Optical fault seeking apparatus. 4,357,071, Cl. 350-6.800.
Manning, William O., to Colt Industries Operating Corp. Carburetor. 4,357,283, Cl. 261-23.00A.

Mantulo, Alexandr P.; Novikov, Ivan N.; and Feldman, Isai N. Method of recovery of liquid chlorine derivatives of hydrocarbons. 4,357,213, Cl. 203-89.000.

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Sheibley, Dean W.; Rieker, Lorra L.; Hsu, Li-Chen; and Manzo, Michelle A., 4,357,402, Cl. 429-206.000.

Manzoni, Stephane. Control device for vehicle rearview mirror. 4,357,076, Cl. 350-307.000.

Mara, Luigi: *See*—
Pippa, Roberto; De Toffol, Andrea; Lepori, Agostino; and Mara, Luigi, 4,357,270, Cl. 523-335.000.

Maremont Corporation: *See*—
Guzder, Shapoor B.; and Zavodny, Eugene N., 4,356,898, Cl. 188-280.000.

Marine Industrie Limitee: *See*—
Waters, Michael J.; Taschereau, Andre; and Fortin, Jacques, 4,356,784, Cl. 114-248.000.

Marini, Louis G.; and Marini, Thomas O. Utility cart. 4,357,029, Cl. 280-47.190.

Marini, Thomas O.: *See*—
Marini, Louis G.; and Marini, Thomas O., 4,357,029, Cl. 280-47.190.

Markovsky, Evgeny A.: *See*—
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.

Marlin, Jay: *See*—
Herskovitz, Sheldon B.; Marlin, Jay; and Stiglitz, Martin R., 4,357,136, Cl. 433-224.000.

Marriott, Joe E.: *See*—
Ressmeyer, James; Marriott, Joe E.; and Jones, Lawrence T., 4,357,600, Cl. 340-347.0NT.

Mars Limited: *See*—
Barker, David, 4,357,362, Cl. 426-643.000.

Marshall, Fred; and Fogarasy, Attila A., to Xerox Corporation. Stitchers. 4,356,947, Cl. 227-5.000.

Martel, Jacques; Tessier, Jean; Teche, Andre; and Demoute, Jean-Pierre, to Roussel Uclaf. Substituted pyridine methyl esters of dimethyl cyclopropane carboxylic acids and their use as insecticides. 4,357,335, Cl. 424-263.000.

Martel, Jacques; and Sillard, Gilles, to Thomson-CSF. Passive electromagnetic wave limiter and duplexer formed by means of such a limiter. 4,357,583, Cl. 333-17.00L.

Martin, Jose G.: *See*—
Hoffman, Thomas J.; and Martin, Jose G., 4,356,813, Cl. 126-439.000.

Martin, Niles J.: *See*—
Kappenhagen, George A.; Martin, Niles J.; Pace, John E.; Sette, Robert A.; Randall, Charles E.; Jackson, Leigh F.; and Bains, Gurdip S., 4,356,895, Cl. 187-17.000.

Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, to BASF Farben & Fasern AG. Process for threading up a rapidly travelling thread in a texturizing nozzle. 4,356,604, Cl. 28-255.000.

Martucci, Frank C. Dripless ceiling paint roller and paint metering pan. 4,356,588, Cl. 15-257.060.

Marvin Glass & Associates: *See*—
Baer, Ralph H.; Cope, Leonard D.; Holt, Oliver D.; and Morrison, Howard J., 4,357,014, Cl. 273-85.00G.
Terzian, Rouben T., 4,356,663, Cl. 46-118.000.

Masanori, Kawaguchi: *See*—
Katsushige, Matsuzaki; Seiji, Narazaki; and Masanori, Kawaguchi, 4,357,134, Cl. 431-9.000.

Mase, Syunzo: *See*—
Oki, Shuichiro; and Mase, Syunzo, 4,357,223, Cl. 204-195.00S.

Mashimo, Yukio: *See*—
Ikawa, Kazuo; Hirohata, Michio; Matsuda, Mutsuhide; and Mashimo, Yukio, 4,357,087, Cl. 354-33.000.

Mason, John L., to Garrett Corporation, The. Turbocharger combustor system. 4,356,696, Cl. 60-606.000.

Massachusetts Institute of Technology: *See*—
Fan, John C. C.; and Gale, Ronald P., 4,357,183, Cl. 148-181.000.
Giard, Donald J.; and Fleischaker, Robert J., Jr., 4,357,422, Cl. 435-68.000.

Massoni, Francois; Canarelli, Filippe; and Fellrath, Francoise. Automatic control device for lighting and extinction of headlamps in a vehicle. 4,357,558, Cl. 315-83.000.

Masuda, Senichi; and Sugita, Naoki, to Midori Anzen Co., Ltd. High-efficiency electrostatic air filter device. 4,357,150, Cl. 55-6.000.

Masuho, Yasuhiko; Umemoto, Naoji; Hara, Takeshi; and Hirai, Hidematsu, to Teijin Limited; and Hirai, Hidematsu. Antitumor protein hybrid and process for the preparation thereof. 4,357,273, Cl. 260-112.50R.

Matern, Kurt: *See*—
Grigoleit, Georg; Matern, Kurt; Kohler, Helmut; and Collin, Gerd, 4,357,472, Cl. 549-49.000.

Mathis, Robert D.: *See*—
Hine, Gordon; and Mathis, Robert D., 4,356,645, Cl. 37-281.000.

Matney, Arthur. Hang hole device for display of package. 4,356,919, Cl. 206-470.000.

Matoba, Yasuo, to Osaka Soda Co. Ltd. Curable composition of halogen-containing polymer. 4,357,446, Cl. 525-281.000.

Matson, Crawford A.: *See*—
Snyder, Michael D.; and Matson, Crawford A., 4,356,949, Cl. 227-76.000.

Matsuda, Mutsuhide: *See*—
Ikawa, Kazuo; Hirohata, Michio; Matsuda, Mutsuhide; and Mashimo, Yukio, 4,357,087, Cl. 354-33.000.

Matsui, Fujio, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. System for controlling air-fuel ratio. 4,356,797, Cl. 123-440.000.

Matsui, Michikage: *See*—
Ozaki, Kiyotaka; and Matsui, Michikage, 4,357,390, Cl. 428-398.000.

Matsuno, Yoshiyuki: *See*—
Nakabayashi, Yasuyuki; Matsuno, Yoshiyuki; and Katsuta, Kihei, 4,356,982, Cl. 241-17.000.

Matsuo, Yoshiho: *See*—
Tsubaki, Kazumi; Morinaga, Hiroshi; Matsuo, Yoshiho; and Iwabuchi, Takeshi, 4,357,448, Cl. 526-65.000.

Matsushima, Katsuaki; and Sakai, Masayuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Heater with adjustable mix regulating damper for bilevel operation. 4,356,965, Cl. 237-12.30B.

Matsushima, Tetsuo; Kondow, Ryotaro; and Matsuzawa, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital distance relays. 4,357,666, Cl. 364-492.000.

Matsushita, Hideo: *See*—
Ueyama, Yoshinari; Mori, Kikuo; and Matsushita, Hideo, 4,356,782, Cl. 112-197.000.

Matsushita, Tetsuo: *See*—
Satoh, Eiji; Matsushita, Tetsuo; Ishida, Atsushi; Ishitobi, Tamio; and Muraoka, Shigemitsu, 4,357,389, Cl. 428-373.000.

Matsuzawa, Kunio: *See*—
Matsushima, Tetsuo; Kondow, Ryotaro; and Matsuzawa, Kunio, 4,357,666, Cl. 364-492.000.

Mattox, Douglas M.: *See*—
Ho, Shih-Ming; Yoldas, Bulent E.; and Mattox, Douglas M., 4,357,427, Cl. 501-153.000.

Matzner, Bruce: *See*—
Wolters, Richard A., Jr.; Lee, Tommy C.; and Matzner, Bruce, 4,357,298, Cl. 376-441.000.

Mawhinney, Daniel D., to RCA Corporation. Wideband microwave frequency divider. 4,357,580, Cl. 331-1.00R.

Max Kammerer GmbH: *See*—
Burghoff, Karl; Supper, Ottmar; and Trube, Hans, 4,356,737, Cl. 74-501.00R.

May, Klaus D.; and Eckstein, Dana L., to Westinghouse Electric Corp. Variable impedance circuit. 4,357,544, Cl. 307-34.000.

Mayer, Herbert E.; and Lobach, Ernst W., to Censor Patent- und Versuchs-Anstalt. Arrangement for projection copying masks on to a work piece. 4,357,100, Cl. 355-62.000.

Mayer, Martin: *See*—
Bogner, Karl-Heinz; and Mayer, Martin, 4,356,735, Cl. 74-7.00A.

Mayer, Walter: *See*—
Karl, Rupert; Mayer, Walter; Schuller, Edmund; and Braun, Erwin, 4,356,692, Cl. 57-263.000.

Mayer, William R., to Stewart-Warner Corporation. Rectangular seal beam lamp and universal support assembly. 4,357,651, Cl. 362-275.000.

Mayfield, John M., Jr.; and Haselswerdt, Vernon, to Microphor, Inc. Temperature controlled valve mechanism and method. 4,356,833, Cl. 137-62.000.

Maynard, Michael B. Game racket having removable stringed insert. 4,357,012, Cl. 273-73.00L.

McCarty, Lewis V., to General Electric Company. Refractory metal coating method. 4,357,365, Cl. 427-52.000.

McCulloch, Donald S.: *See*—
Taylor, Gene E.; and McCulloch, Donald S., 4,356,577, Cl. 5-62.000.

McDaniel, Max P., to Phillips Petroleum Company. Chemical dehydroxylation of silica. 4,357,451, Cl. 526-106.000.

McFarlane, Phillip J., to E. Allman & Company Limited. Devices for testing spraying nozzles. 4,357,670, Cl. 364-510.000.

McGann, Timothy W.; and Olsen, William G., to Rockwell International Corporation. Method of fabricating a composite structure. 4,357,193, Cl. 156-286.000.

McGee, Ellis. Work pouch. 4,356,854, Cl. 150-12.000.

McGhie, Joseph A.: *See*—
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,357,360, Cl. 426-538.000.

McGinn, Michael, to Motorola, Inc. Sync separator with variable bias control. 4,357,629, Cl. 358-153.000.

McIntosh, Lawrie, to Shepherd Products Ltd. Base structure for barbecue grill. 4,356,988, Cl. 248-129.000.

McKenna, William F.; and Cwienkala, Gerry A., to Leveling Devices, Inc. Lift truck digital inclinometer. 4,356,638, Cl. 33-333.000.

McKibben, Gary E.; and Helseth, Mary Jo, to Procter & Gamble Company, The. Inserter for vaginal product. 4,356,817, Cl. 128-127.000.

McLoughlin, John; and Athanasiades, Neocles, to McLoughlin, John. Safety bar for fire trucks. 4,357,034, Cl. 280-751.000.

McLoughlin, Nelson E.: *See*—
Priestly, William J.; and McLoughlin, Nelson E., 4,356,926, Cl. 220-67.000.

McNicol, Melvin A.: *See*—
Binet, Rejean; Cloutier, Joseph A. R.; Edmonds, Anthony C. F.; Holden, Harold W.; and McNicol, Melvin A., 4,357,184, Cl. 149-2.000.

McQuay-Perfex Inc.: *See*—
Vogel, Kenneth E., 4,356,703, Cl. 62-155.000.

McRee, Robert E., Jr., to Environmental Control Products, Inc. Underfire air and steam system and incinerating process for a controlled starved-air incinerator. 4,356,778, Cl. 110-244.000.

McRoskey, John W.; and Swartz, Delbert D., to Republic Tool & Manufacturing Corporation. Squeeze-type dispenser for powdered materials. 4,356,941, Cl. 222-632.000.

McShane, Peter F. Portable fencing. 4,356,999, Cl. 256-26.000.

McVey, John K.; and Filipiak, Stanley E., to Illinois Tool Works Inc. Capacitive keyswitch with overtravel mechanism on moveable plate. 4,357,646, Cl. 361-288.000.

McWilliams, Stephen G., to Bell Telephone Laboratories, Incorporated. Tamper protection for an automatic remote meter reading unit. 4,357,601, Cl. 340-506.000.

Mead Corporation, The: *See*—
Calvert, Rodney K., 4,357,186, Cl. 156-73.100.
Embro, Joseph J., Jr., 4,356,908, Cl. 198-461.000.
Wiley, Robert A.; Williams, Theodore F.; and Davis, James W., 4,357,613, Cl. 346-75.000.

Meadows, Frank N., to Hoveringham Group Limited. Aerosol disposal unit. 4,356,981, Cl. 241-16.000.

Mealing, Barrie E.; and Payne, Raymond H., to Hestair Eagle Limited. Refuse collecting apparatus. 4,356,589, Cl. 15-320.000.

Mehra, Ravinder C.; Hahn, Heinz W.; and Aggarwal, Raj K., to Sybron Corporation. Disposable, one-piece filter unit. 4,357,240, Cl. 210-455.000.

Meier, Max: *See*—
Chylewski, Christoph; Jan, Gerald; Kurzen, Roland; Meier, Max; and Schellenberg, Matthias, 4,357,280, Cl. 260-465.00R.

Meiji Seika Kaisha, Ltd.: *See*—
Iwamatsu, Katsuyoshi; Inoue, Shigeharu; Miyauchi, Keinosuke; Kondo, Shinichi; Seki, Shigeo; and Yamada, Yujiro, 4,357,331, Cl. 424-246.000.

Mellor, H. Clay, to Arguto, Inc. Self-lubricating bearing and the like, and method of making same. 4,357,249, Cl. 252-12.000.

Melvin, Waymon A., Jr., to Westinghouse Electric Corp. Three-phase power distribution network communication system. 4,357,598, Cl. 340-310.00A.

Memorex Corporation: *See*—
Kahle, Henry; Menkes, Jeffrey R.; and Christensen, Dean L., 4,356,918, Cl. 206-444.000.

Menkes, Jeffrey R.: *See*—
Kahle, Henry; Menkes, Jeffrey R.; and Christensen, Dean L., 4,356,918, Cl. 206-444.000.

Mens Franciscus, Willy A.; and Van Dorst, Ludovicus, to International Standard Electric Corporation. Singler device. 4,357,007, Cl. 271-96.000.

Merck & Co., Inc.: *See*—
Christensen, Burton G.; and Ratcliffe, Ronald W., 4,357,342, Cl. 424-274.000.
Sandford, Paul A.; and Baird, John K., 4,357,260, Cl. 252-363.500.

Mergenthaler, Robert: *See*—
Leiber, Heinz; and Mergenthaler, Robert, 4,357,055, Cl. 303-52.000.

Metal Closures Limited: *See*—
Guest, John H., 4,356,680, Cl. 53-412.000.

Metallisation Limited: *See*—
Ashman, Stewart J., 4,356,971, Cl. 239-84.000.

Metallurgical Research, Inc.: *See*—
Clements, Kenneth P., 4,357,605, Cl. 340-825.140.

Metcalfe, Lincoln D.: *See*—
Frank, Dieter; and Metcalfe, Lincoln D., 4,357,181, Cl. 148-6.14R.

Metron Logging, Inc.: *See*—
Lee, Bert, 4,357,033, Cl. 280-703.000.

Meusel, Jurgen: *See*—
Huber, Peter; and Meusel, Jurgen, 4,357,252, Cl. 252-78.300.

Meyer, Gilbert F., to Machinery Welder Manufacturing Corp. Multischedule welding control. 4,357,518, Cl. 219-130.100.

Meyle, William H.: *See*—
Dougherty, Lawrence W.; and Meyle, William H., 4,356,606, Cl. 29-25.150.

Meywald, Klaus: *See*—
Ohnmacht, Helmut; and Meywald, Klaus, 4,357,521, Cl. 219-375.000.

Michel, Jean-Pierre: *See*—
Sachetto, Jean-Pierre; Michel, Jean-Pierre; Cuccolo, Sergio; and Regnault, Alain, 4,357,467, Cl. 536-56.000.

Micron Kiki Co., Ltd.: *See*—
Ikenoue, Tsuneo; Liu, Shin-yng; Umemoto, Shuichi; and Arai, Naoki, 4,357,654, Cl. 363-21.000.

Microphor, Inc.: *See*—
Mayfield, John M., Jr.; and Haselswerdt, Vernon, 4,356,833, Cl. 137-62.000.

Midori Anzen Co., Ltd.: *See*—
Masuda, Senichi; and Sugita, Naoki, 4,357,150, Cl. 55-6.000.

Migeon, Jean-Pierre: *See*—
Plancon, Michel; Migeon, Jean-Pierre; and Grand Chavin, Paul, 4,357,693, Cl. 368-187.000.

Migeon, Rene: *See*—
Le Grand, Yves; and Migeon, Rene, 4,357,545, Cl. 307-64.000.

Milberger, Lionel J., to FMC Corporation. Matrix switching control of subsea production systems. 4,356,841, Cl. 137-624.180.

Milczarek, Richard J.: *See*—
Anderson, Thomas W.; Jenness, Robert V.; Milczarek, Richard J.; Schaefer, Edwin M., III; and Stekl, Robert M., 4,357,493, Cl. 179-6.040.

Miles, Michael J.: *See*—
Cameron-Johnson, Alan; and Miles, Michael J., 4,356,761, Cl. 91-490.000.

Milian, Alwin S., Jr.: *See*—
Anderson, Daniel G.; England, David C.; and Milian, Alwin S., Jr., 4,357,282, Cl. 260-544.00F.

Miller, Jean C.; and Gutowski, Gerald E., to Eli Lilly and Company. Use of VLB 3-(2-chloroethyl) carboxamide in treating neoplasms. 4,357,334, Cl. 424-262.000.

Miller, John C.; and Burnett, Archibald L., to Union Carbide Corporation. Double metering extruder screw and method of extrusion. 4,357,291, Cl. 264-176.00R.

Miller, Kelly A., to United States of America, National Security Agency. Automatic frequency alteration circuit. 4,357,549, Cl. 307-523.000.

Miller, Paul A., to Sunrise Systems, Inc. Display generation apparatus. 4,357,671, Cl. 364-518.000.

Miller, Ralph A.: *See*—
Roper, Charles R., 4,356,930, Cl. 220-306.000.

Mills, Peter S.: *See*—
Kellet, William H.; and Mills, Peter S., 4,357,167, Cl. 106-97.000.

Milora, Carmen J., to Western Electric Company, Inc. Solder-bearing lead having solder-confining stop means. 4,357,069, Cl. 339-275.00R.

Minagawa, Shoichi; Sakai, Takamasa; Okamoto, Takeshi; and Niimi, Morihiro, to Clarion Co., Ltd. Surface-acoustic-wave device. 4,357,553, Cl. 310-313.00B.

Mining Tools, Div. of Smith Int'l., Inc.: *See*—
Dziak, William A., 4,356,873, Cl. 175-410.000.

Minnesota Mining and Manufacturing Company: *See*—
Cellone, Luigi, 4,357,418, Cl. 430-539.000.
Freerks, Conrad T., 4,356,670, Cl. 51-139.000.
Haugen, Orville C., 4,356,764, Cl. 100-169.000.
Larson, Roderick W.; and Reidt, Dean K., 4,356,599, Cl. 24-16.0PB.
Leichter, Louis M.; Stofko, John J., Jr.; and Sonnonstine, Terry J., 4,357,405, Cl. 430-58.000.
Schmit, Paul F., 4,356,955, Cl. 229-75.000.
Sills, Peter D., 4,357,419, Cl. 430-564.000.

Minolta Camera Kabushiki Kaisha: *See*—
Kimura, Kazuo, 4,357,084, Cl. 354-24.000.
Taguchi, Katsumi; Nishioka, Yuji; and Kuroda, Muneo, 4,357,099, Cl. 355-46.000.

Minor, James C., to International Business Machines Corporation. Hot roll fuser. 4,357,388, Cl. 428-331.000.

Minorikawa, Koichi; and Kitazawa, Shinichi, to Toray Industries, Inc. Fasciated yarn. 4,356,690, Cl. 57-210.000.

Misaki, Hideo: *See*—
Yoshino, Eiichi; Ishikawa, Hidehiko; Inoue, Fumitaka; Takada, Masaki; and Misaki, Hideo, 4,357,425, Cl. 435-191.000.

Missig, James R.: *See*—
Tyree, Lewis, Jr.; Missig, James R.; and Rhoades, George D., 4,356,707, Cl. 62-381.000.

Mita Industrial Company Limited: *See*—
Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,357,406, Cl. 430-137.000.
Sasaki, Koichi; Sumida, Yasuji; and Ishida, Hiroshi, 4,357,101, Cl. 355-75.'00.

Mitchell, Richard F.: *See*—
Murray, Robert J.; and Mitchell, Richard F., 4,357,584, Cl. 333-195.000.

Mitchell, William O.: *See*—
Hamilton, C. Ray; Mitchell, William O.; and Ellington, Gordon H., 4,356,744, Cl. 83-24.000.

Mitsubishi Acetate Co., Ltd.: *See*—
Mochida, Naoki; Morifuji, Kazuhiko; and Sakai, Takashi, 4,357,188, Cl. 156-180.000.

Mitsubishi Chemical Industries Limited: *See*—
Kakogawa, Genjiro; Hasuo, Masayoshi; Suga, Yoshinori; Kitada, Hisashi; and Uehara, Yumito, 4,357,452, Cl. 526-139.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Ishihara, Osamu; Mori, Tetsurou; and Sawano, Hiroshi, 4,357,582, Cl. 331-96.000.
Kawata, Yukio; Obata, Tetsuo; Keino, Chouji; and Tayama, Isamu, 4,357,513, Cl. 219-10.55B.
Tamura, Koichi; Kajiyama, Ryuichi; and Iwata, Shigemi, 4,356,896, Cl. 187-29.00R.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Yamaguchi, Takaaki, 4,357,256, Cl. 252-188.240.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Nakabayashi, Yasuyuki; Matsuno, Yoshiyuki; and Katsuta, Kihei, 4,356,982, Cl. 241-17.000.

Mitsubishi Rayon Co., Ltd.: *See*—
Mochida, Naoki; Morifuji, Kazuhiko; and Sakai, Takashi, 4,357,188, Cl. 156-180.000.

Mitsui Mining & Smelting Co., Ltd.: *See*—
Arita, Satoshi; Touge, Kiyomi; Shida, Akio; and Yamaura, Sigenobu, 4,357,225, Cl. 204-281.000.

Mittelmann, Gerhard, to Swiss Aluminium Ltd. Container, in particular for transporting freight by air. 4,357,059, Cl. 312-321.000.

Miura, Tadao: *See*—
Takaoka, Takashi; Mochizuki, Masahiko; Miura, Tadao; and Yamashita, Mitsuo, 4,357,366, Cl. 427-54.100.
Taketomi, Chiaki; Miura, Tadao; Akiba, Keiji; and Hirose, Koji, 4,357,636, Cl. 360-62.000.

Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the fuel feeding rate of an internal combustion engine. 4,356,803, Cl. 123-492.000.

Miyamura, Yoshinori: *See*—
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Shigematsu, Kazuo; Ojima, Masahiro; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,357,616, Cl. 346-135.100.

Miyashita, Hiroshi: *See*—
Murakami, Nobuyuki; and Miyashita, Hiroshi, 4,357,431, Cl. 523-161.000.

Miyauchi, Keinosuke: *See*—
Iwamatsu, Katsuyoshi; Inoue, Shigeharu; Miyauchi, Keinosuke; Kondo, Shinichi; Seki, Shigeo; and Yamada, Yujiro, 4,357,331, Cl. 424-246.000.

Miyoshi, Takeshi; Takeuchi, Koji; Nukui, Tatsuo; and Oshida, Hidetaka, to Ajinomoto Company Incorporated. Stabilized halogen-containing resin compositions. 4,357,434, Cl. 524-178.000.

Mizuno Corporation: *See*—
Mizuno, Toshio; and Kibata, Shiro, 4,356,710, Cl. 66-196.000.

Mizuno, Toshio; and Kibata, Shiro, to Mizuno Corporation. Interlock fabric with lining. 4,356,710, Cl. 66-196.000.

Mizuno, Yutaka: *See*—
Imazeki, Ryoji; Hattori, Seiichi; and Mizuno, Yutaka, 4,357,604, Cl. 340-731.000.

Mizushima, Koichi: *See*—
Goodenough, John B.; and Mizushima, Koichi, 4,357,215, Cl. 204-2.100.

Mobil Oil Corporation: *See*—
Bullard, Edward M.; and Smith, Gregory M., 4,357,191, Cl. 156-244.140.
Chu, Chin-Chiun, 4,357,264, Cl. 252-455.00Z.
Dwyer, Francis G.; and Jenkins, Edwin E., 4,357,233, Cl. 208-109.000.
Heck, Roland H.; Cleck, Stephen M.; Shih, Stuart S.; and Wilson, Robert C., 4,357,263, Cl. 252-439.000.
Holland, Robert E.; and Tabak, Samuel A., 4,357,232, Cl. 208-87.000.
Ruehle, William H., 4,357,689, Cl. 367-23.000.
Savins, Joseph G., 4,356,866, Cl. 166-261.000.

Mochida, Naoki; Morifuji, Kazuhiko; and Sakai, Takashi, to Mitsubishi Rayon Co., Ltd.; and Mitsubishi Acetate Co., Ltd. Method for manufacturing cigarette filters. 4,357,188, Cl. 156-180.000.

Mochizuki, Masahiko: *See*—
Takaoka, Takashi; Mochizuki, Masahiko; Miura, Tadao; and Yamashita, Mitsuo, 4,357,366, Cl. 427-54.100.

Moddemeijer, Kees, to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek. Projector for the projection of a panoramic image and camera for the manufacture of films for a projector of this kind. 4,357,081, Cl. 352-69.000.

Moebus, Horst, to Karl Schmidt GmbH. Liquid-cooled, composite piston for internal-combustion engines. 4,356,800, Cl. 123-193.00P.

Mohr, Larry D.: *See*—
Gabrielson, David L.; and Mohr, Larry D., 4,356,671, Cl. 51-325.000.

Mojonnier, Albert B. Reclosable bag and method of closing same. 4,356,954, Cl. 229-65.000.

Moleculon Research Corporation: *See*—
Obermayer, Arthur S.; and Nichols, Larry D., 4,356,969, Cl. 239-6.000.

Moller, Hans J.: *See*—
Kjaer, Ian; and Moller, Hans J., 4,356,747, Cl. 83-451.000.

Molnar, Bela, to United States of America, Navy. Annealing of ion-implanted GaAs and InP semiconductors. 4,357,180, Cl. 148-1.500.

Molnar, Georg: *See*—
Kuhnlein, Hans; Kung, Hans R.; and Molnar, Georg, 4,357,206, Cl. 159-13.00A.

Mondt, Josef; and Rinno, Helmut, to Hoechst Aktiengesellschaft. Process for the preparation of copolymers containing hydroxyl groups and the use thereof. 4,357,455, Cl. 528-73.000.

Monnais, Christian: *See*—
Grollier, Jean-Francois; Monnais, Christian; and Peritz, Lyonel, 4,357,141, Cl. 8-406.000.

Monolithic Systems, Corp.: *See*—
Fellinger, Michael W., 4,357,657, Cl. 364-200.000.

Monsanto Company: *See*—
Yu, Jing-peir, 4,357,290, Cl. 264-147.000.

Montedison S.p.A.: *See*—
Pippa, Roberto; De Toffol, Andrea; Lepori, Agostino; and Mara, Luigi, 4,357,270, Cl. 523-335.000.

Montgomery, John A.; and Shortnacy, Anita T., to United States of America, health and Human Services. Prodrug derivatives of 9β-D-arabinofuranosyl-2-fluoroadenine. 4,357,324, Cl. 424-180.000.

Montuori, Carl F. Thermally responsive bimetallic jewelry. 4,357,694, Cl. 368-282.000.

Moore, George G. I., to Riker Laboratories, Inc. Substituted furans. 4,357,345, Cl. 424-285.000.

Moore, Ronald D., to Chivas Products, Limited. Vehicle assist strap. 4,356,592, Cl. 16-125.000.

Mooy, Michael G. Musical drum construction. 4,356,757, Cl. 84-411.00R.

Moraine, Gerard. Packing for a shell with a case, having between this latter and the front part of the shell a curved part of smaller diameter. 4,356,913, Cl. 206-3.000.

Morante, Alberto T.; and Morante, Roger. Animal trap. 4,356,655, Cl. 43-67.000.

Morante, Roger: *See*—
Morante, Alberto T.; and Morante, Roger, 4,356,655, Cl. 43-67.000.

Morbitzer, Leo: *See*—
Steffen, Ulrich; Alberts, Heinrich; and Morbitzer, Leo, 4,357,445, Cl. 525-244.000.

More, Henry S.: *See*—
Jeter, John D.; and More, Henry S., 4,356,629, Cl. 29-885.000.

Morello, Aldo, to Etablissements Trouvay & Cauvin. Guillotine valve. 4,356,838, Cl. 137-242.000.

Mori, Kikuo: *See*—
Ueyama, Yoshinari; Mori, Kikuo; and Matsushita, Hideo, 4,356,782, Cl. 112-197.000.

Mori, Tetsurou: *See*—
Ishihara, Osamu; Mori, Tetsurou; and Sawano, Hiroshi, 4,357,582, Cl. 331-96.000.

Morie, Gerald P.: *See*—
Sloan, Cephas H.; Wright, Jerry A.; and Morie, Gerald P., 4,357,379, Cl. 428-113.000.

Morifuji, Kazuhiko: *See*—
Mochida, Naoki; Morifuji, Kazuhiko; and Sakai, Takashi, 4,357,188, Cl. 156-180.000.

Morinaga, Hiroshi: *See*—
Tsubaki, Kazumi; Morinaga, Hiroshi; Matsuo, Yoshiho; and Iwabuchi, Takeshi, 4,357,448, Cl. 526-65.000.

Morino, Seiji: *See*—
Tokura, Norihito; Kawai, Hisasi; and Morino, Seiji, 4,356,807, Cl. 123-606.000.

Moriya, Makoto: *See*—
Kubo, Kenji; and Moriya, Makoto, 4,356,740, Cl. 74-560.000.

Morris Oil Field Supply Co.: *See*—
Palone, Richard D., 4,357,064, Cl. 339-89.00R.

Morrison, Howard J.: *See*—
Baer, Ralph H.; Cope, Leonard D.; Holt, Oliver D.; and Morrison, Howard J., 4,357,014, Cl. 273-85.00G.

Mortimer, David B., to Reynolds Metals Company. Acoustical enclosure system. 4,356,884, Cl. 181-200.000.

Morton, Philip O.: *See*—
Gaylord, Edson C.; Black, David K.; Anderson, Russell L.; and Morton, Philip O., 4,356,870, Cl. 169-65.000.

Mosch, Theodorus W. System wall or system ceiling. 4,356,677, Cl. 52-489.000.

Moser, Theo, to Robert Bosch GmbH. Method for applying stickers to push-through containers. 4,357,192, Cl. 156-252.000.

Mossey, Robert A., to AMF Incorporated. Material dispenser. 4,356,892, Cl. 187-9.00R.

Motokawa, Masatomo: *See*—
Fukushima, Kazunobu; and Motokawa, Masatomo, 4,357,070, Cl. 339-278.00T.

Motorola, Inc.: *See*—
Espe, Roy H.; and Main, W. Eric, 4,357,547, Cl. 307-272.00A.
Guan, Der-Yang, 4,357,162, Cl. 75-175.00R.
Lo Cascio, James J., 4,356,809, Cl. 123-632.000.
McGinn, Michael, 4,357,629, Cl. 358-153.000.

Motz, Herbert: *See*—
Vaeth, Guenter; Bachmann, Rudolf; Senkpiel, Werner; Hartmann, Hans-Joerg; Falk, Roland; and Motz, Herbert, 4,357,378, Cl. 428-64.000.

MTI-Mischtechnik Industrieanlagen GmbH: *See*—
Honemeyer, Rolf; and Muller, Wolfgang, 4,357,111, Cl. 366-145.000.

Muchnik, Simon V.: *See*—
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.

Muehlner, Dirk J.; Nelson, Terence J.; and Wolfe, Raymond, to Bell Telephone Laboratories, Incorporated. Reverse-rotation transfer gates. 4,357,684, Cl. 365-36.000.

Muether, Manfred: *See*—
Fleer, Ernst O.; Gunther, Werner; and Muether, Manfred, 4,357,539, Cl. 378-170.000.

Mukaddam, Waheed: *See*—
Buffington, Chester G.; Fang, Herbert H.; Friedfeld, Barry A.; Kaniecki, Thaddeus J.; Kennedy, John W.; Liu, Chong-tan; Sternberg, Morton; Feng, Henry H.; Chen, Paul Y.; Mukaddam, Waheed; and Narasimhan, Pattamadai E., 4,357,175, Cl. 134-10.000.

Muller, Friedemann: *See*—
Alberts, Heinrich; Fischer, Winfried; Muller, Friedemann; Peters, Horst; Leuschke, Christian; and Baasch, Hans-Peter, 4,357,267, Cl. 524-40.000.

Muller, Hanns-Peter: *See*—
Stemmler, Ingo; Muller, Hanns-Peter; and Wagner, Kuno, 4,357,255, Cl. 252-182.000.

Muller, Klaus; Friese, Karl-Hermann; and Holfelder, Gerhard, to Robert Bosch GmbH. Method to render accessible an electrical contact region of a composite element. 4,356,628, Cl. 29-878.000.

Muller-Kuhn, Helmut; Scharren, Gunter; Kohlmeier, Wilfried; Grillo, Michael; and Rost, Jurgen, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Pop-top lid. 4,356,929, Cl. 220-270.000.

Muller, Siegfried. Brushless D.C. motor. 4,357,550, Cl. 310-43.000.

Muller, Wolfgang: *See*—
Honemeyer, Rolf; and Muller, Wolfgang, 4,357,111, Cl. 366-145.000.

Munekata, Kenichi: *See*—
Tomita, Tamaki; Munekata, Kenichi; Ohkoshi, Fumihiko; and Hasegawa, Toshifumi, 4,356,621, Cl. 29-568.000.

Murakami, Nobuyuki; and Miyashita, Hiroshi, to Pentel Kabushiki Kaisha. Ball-point pen ink composition erasable by rubber eraser. 4,357,431, Cl. 523-161.000.

Muraoka, Shigemitsu: *See*—
Satoh, Eiji; Matsushita, Tetsuo; Ishida, Atsushi; Ishitobi, Tamio; and Muraoka, Shigemitsu, 4,357,389, Cl. 428-373.000.

Murata Manufacturing Co., Ltd.: *See*—
Murata, Michihiro; and Okabe, Shinsei, 4,357,426, Cl. 501-135.000.

Murata, Michihiro; and Okabe, Shinsei, to Murata Manufacturing Co., Ltd. Humidity sensitive ceramics. 4,357,426, Cl. 501-135.000.

Murata, Yuji: *See*—
Inculet, Ion I.; and Murata, Yuji, 4,357,234, Cl. 209-127.00B.

Murphy, David P.: *See*—
Myklebust, Terje; and Murphy, David P., 4,356,783, Cl. 114-230.000.

Murphy, Raymond J. Bearing and support. 4,356,902, Cl. 193-35.00R.

Murray, John R. Connecting assembly for geodesic dome framework construction. 4,357,118, Cl. 403-172.000.

Murray, Robert J.; and Mitchell, Richard F., to U.S. Philips Corporation. Acoustic wave devices. 4,357,584, Cl. 333-195.000.

Muschalek, Ben E., Jr. Pipe wrench with jaw heel end extension. 4,356,743, Cl. 81-180.00R.

Myers, Robert E., to International Grating, Inc. Method of molding in solid floor plate to a fiberglass reinforced molded resin grating. 4,357,292, Cl. 264-257.000.

Myklebust, Terje; and Murphy, David P. Portable mooring whip unit. 4,356,783, Cl. 114-230.000.

Nabisco Brands, Inc.: *See*—
Kehoe, Gary; Puglia, Wayne J.; Witzel, Frank; Friello, Dominick R.; and Mackay, Donald A. M., 4,357,354, Cl. 426-3.000.

Nagai, Masahiko, to Ogawa Chemical Industries, Ltd. Nib holder construction for writing implements. 4,357,117, Cl. 401-68.000.

Nagoshi, Mitsuru, to Konishiroku Photo Industry Co., Ltd. Image recording apparatus. 4,357,092, Cl. 355-3.0TR.

Nahas, Joseph J., to Bell Telephone Laboratories, Incorporated. Keypad logic interface circuit. 4,357,496, Cl. 179-84.0VF.

Nair, Vijay G.; Joseph, Joseph P.; and Bernstein, Seymour, to American Cyanamid Company. Multi-glucopyranosyl-fructofuranosyl-galactopyranosyl-glucopyranoside sulfate salts and methods of use. 4,357,326, Cl. 424-180.000.

Nakabayashi, Yasuyuki; Matsuno, Yoshiyuki; and Katsuta, Kihei, to Electric Power Development Co. Ltd.; and Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus and process for producing slurry. 4,356,982, Cl. 241-17.000.

Nakagawa, Koichiro: *See*—
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,357,569, Cl. 318-721.000.

Nakaji, Hideki: *See*—
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,356,717, Cl. 72-342.000.

Nakanishi, Noriyoshi: *See*—
Yamamoto, Shigeyoshi; Sagawa, Nobukazu; and Nakanishi, Noriyoshi, 4,357,526, Cl. 219-544.000.

Nakano, Teruyuki: *See*—
Sakaoka, Hiromu; Nakano, Teruyuki; and Ikeda, Shingo, 4,356,798, Cl. 123-52.0MF.

Narasimhan, Pattamadai E.: *See*—
Buffington, Chester G.; Fang, Herbert H.; Friedfeld, Barry A.; Kaniecki, Thaddeus J.; Kennedy, John W.; Liu, Chong-tan; Sternberg, Morton; Feng, Henry H.; Chen, Paul Y.; Mukaddam, Waheed; and Narasimhan, Pattamadai E., 4,357,175, Cl. 134-10.000.

Nardini, Gian V. Method and device for dousing sunlight with a seasonal effect. 4,357,074, Cl. 350-259.000.

Nasner, Alice: *See*—
Strauss, Kuno; and Nasner, Alice, 4,357,353, Cl. 424-365.000.

Nathans, Robert L. Roulette betting calculator. 4,357,659, Cl. 364-412.000.

National Starch and Chemical Corporation: *See*—
Runavot, Yves; Billault, Georges; and Salvetat, Jacques, 4,357,459, Cl. 528-205.000.

Nattinger, Bruce E.; and Vicik, Stephen J., to Union Carbide Corporation. Multilayer film for primal meat packaging. 4,357,376, Cl. 428-35.000.

Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek: *See*—
Moddemeijer, Kees, 4,357,081, Cl. 352-69.000.

Negaty-Hindi, Guy: *See*—
Zurcher, Edwin; Negaty-Hindi, Guy; and Pujol, Carlos, 4,356,688, Cl. 57-22.000.

Nelson, Edward I., to Burroughs Corporation. Key top for automatic assembly for keyboard apparatus. 4,356,613, Cl. 29-407.000.

Nelson, Norman C., to Kel-Lite Industries, Inc. Rechargeable flashlight. 4,357,648, Cl. 362-183.000.

Nelson, Paul A.; and Shimotake, Hiroshi, to United States of America, Energy. Electrochemical cell having cylindrical electrode elements. 4,357,398, Cl. 429-94.000.

Nelson, Stephen J., to Upjohn Company, The. Pesticidal phenylcarbamoylbenzimidates. 4,357,347, Cl. 424-298.000.

Nelson, Terence J., to Bell Telephone Laboratories, Incorporated. Magnetic bubble memory with ion-implanted layer. 4,357,683, Cl. 365-36.000.

Nelson, Terence J.: *See*—
Muehlner, Dirk J.; Nelson, Terence J.; and Wolfe, Raymond, 4,357,684, Cl. 365-36.000.

New Jersey Zinc Company, The: *See*—
Brand, John R., 4,357,170, Cl. 106-300.000.

Newage Kitchens Limited: *See*—
Pollitt, Thomas B., 4,357,119, Cl. 403-231.000.

NGK Insulators Ltd.: *See*—
Oki, Shuichiro; and Mase, Syunzo, 4,357,223, Cl. 204-195.00S.

Nichols, Larry D.: *See*—
Obermayer, Arthur S.; and Nichols, Larry D., 4,356,969, Cl. 239-6.000.

Nicklaus, Eberhard; Warncke, Heinz; Pross, Wilhelm; and Hartl, Wolfgang, to Bayer Aktiengesellschaft; and Compur-Electronic GmbH. Apparatus for process analysis. 4,357,300, Cl. 422-62.000.

Nielsen, Corine M.: *See*—
Lunder, Tito L.; and Nielsen, Corine M., 4,357,361, Cl. 426-597.000.

Nifco Inc.: *See*—
Kimura, Shigeru, 4,356,601, Cl. 24-297.000.

Niimi, Morihiro: *See*—
Minagawa, Shoichi; Sakai, Takamasa; Okamoto, Takeshi; and Niimi, Morihiro, 4,357,553, Cl. 310-313.00B.

Niinomi, Naoyuki; and Watanabe, Kunihiko, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,356,751, Cl. 84-1.030.

Nilsen, Robert J. Telephone handset cord anti-twist accessory. 4,357,500, Cl. 179-184.000.

Nippon Air Brake Co., Ltd.: *See*—
Kubota, Hitoshi; and Takahashi, Toshiyuki, 4,356,729, Cl. 73-308.000.

Nippon Collin Co., Ltd.: *See*—
Uemura, Masahiro; Harada, Chikao; Sakurado, Kenichi; and Kakamu, Tsunehito, 4,356,827, Cl. 128-680.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Niinomi, Naoyuki; and Watanabe, Kunihiko, 4,356,751, Cl. 84-1.030.
Suzuki, Hideo; and Kaneko, Makoto, 4,356,752, Cl. 84-1.030.
Yokoyama, Kenji, 4,357,578, Cl. 330-252.000.

Nippon Kogaku K.K.: *See*—
Araki, Yoshitaka, 4,357,090, Cl. 354-286.000.
Shimomura, Jun; Ikeda, Hideo; and Iizuka, Yutaka, 4,357,086, Cl. 354-25.000.

Nippon Soken, Inc.: *See*—
Igashira, Toshihiko; Nomura, Ken; and Abe, Seiko, 4,356,804, Cl. 123-549.000.
Tokura, Norihito; Kawai, Hisasi; and Morino, Seiji, 4,356,807, Cl. 123-606.000.
Yoshino, Yasuhisa, 4,356,726, Cl. 73-178.00R.

Nippon Steel Corporation: *See*—
Katsushige, Matsuzaki; Seiji, Narazaki; and Masanori, Kawaguchi, 4,357,134, Cl. 431-9.000.

Nishimaru, Hiroji: *See*—
Takasa, Kenji; Hirakawa, Keizo; Nishimaru, Hiroji; and Honda, Makoto, 4,357,276, Cl. 260-319.100.

Nishimoto, Koji; Higuchi, Kenji; Oki, Toshiyuki; and Machida, Nobuo, to Sumitomo Kinzoku Kogyo Kabushiki Kaisha. Apparatus for continuous manufacture of butt-welded pipe. 4,357,512, Cl. 219-8.500.

Nishino, Ryuichi: *See*—
Sakurada, Kenichi; and Nishino, Ryuichi, 4,356,990, Cl. 248-396.000.

Nishioka, Yuji: *See*—
Taguchi, Katsumi; Nishioka, Yuji; and Kuroda, Muneo, 4,357,099, Cl. 355-46.000.

Nissan Chemical Industries Ltd.: *See*—
Tsubaki, Kazumi; Morinaga, Hiroshi; Matsuo, Yoshiho; and Iwabuchi, Takeshi, 4,357,448, Cl. 526-65.000.

Nissan Motor Company, Limited: *See*—
Izumi, Masao, 4,356,704, Cl. 62-158.000.
Kano, Hisaei, 4,357,650, Cl. 362-234.000.
Kawakami, Yasushi, 4,357,712, Cl. 455-161.000.
Kubo, Kenji; and Moriya, Makoto, 4,356,740, Cl. 74-560.000.
Kubota, Hitoshi; and Takahashi, Toshiyuki, 4,356,729, Cl. 73-308.000.
Matsui, Fujio, 4,356,797, Cl. 123-440.000.
Sakurada, Kenichi; and Nishino, Ryuichi, 4,356,990, Cl. 248-396.000.
Sumi, Yasuo; Watanabe, Tsuguo; and Yamane, Ken, 4,356,695, Cl. 60-602.000.
Tomioka, Hirotaka; and Yamagata, Shyuji, 4,357,040, Cl. 293-102.000.

Nitschke, John S. Conveyor drive system for a glass sheet manufacturing system. 4,356,912, Cl. 198-790.000.

Nitto Chemical Industry Co.: *See*—
Enomoto, Makoto; and Doke, Nobumichi, 4,357,349, Cl. 424-302.000.

Nitzinger, Karl: *See*—
Husslein, Julius; Rohrl, Franz; Nitzinger, Karl; and Gerl, Josef, 4,357,522, Cl. 219-400.000.

Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, to Canon Kabushiki Kaisha. Focus detection device. 4,357,085, Cl. 354-25.000.

Nomura, Ken: *See*—
Igashira, Toshihiko; Nomura, Ken; and Abe, Seiko, 4,356,804, Cl. 123-549.000.

North American Mfg. Company: *See*—
Wilde, James D.; and Hoffman, Rolland L., 4,357,135, Cl. 432-11.000.

North American Philips Corporation: *See*—
Haas, David J., 4,357,535, Cl. 378-57.000.

Northern Telecom Limited: *See*—
Daaboul, Fouad; and Le Van, Tiu, 4,357,491, Cl. 179-1.0SP.

Northrop Corporation: *See*—
Worth, Robert N.; and Parson, Larry T., 4,356,984, Cl. 244-1.0TD.

Northwestern University: *See*—
Senyei, Andrew E.; and Widder, Kenneth J., 4,357,259, Cl. 252-316.000.

Northwood Mills, Ltd.: *See*—
Jasperson, F. Bon, 4,357,384, Cl. 428-215.000.

Norton Company: *See*—
Hauptman, Arthur, 4,356,676, Cl. 52-403.000.
Lucek, John W., 4,357,222, Cl. 204-181.00F.

Nortronics Company, Inc.: *See*—
Heinz, John E.; and Albrecht, M. Grant, 4,357,640, Cl. 360-119.000.

November, Dan; and Adler, Robert, to Buchler Instruments, Inc. Fraction collector. 4,356,909, Cl. 198-472.000.

Novikov, Ivan N.: *See*—
Mantulo, Alexandr P.; Novikov, Ivan N.; and Feldman, Isai N., 4,357,213, Cl. 203-89.000.

Novo Industri A/S: *See*—
Branner-Jogensen, Sven; Schneider, Palle; and Eigtved, Peter, 4,357,357, Cl. 426-36.000.

Nukui, Tatsuo: *See*—
Miyoshi, Takeshi; Takeuchi, Koji; Nukui, Tatsuo; and Oshida, Hidetaka, 4,357,434, Cl. 524-178.000.

Nurse, William A. Mill for cane sugar and related uses. 4,357,171, Cl. 127-5.000.

Nyberg, Paul M.: *See*—
Chen, Gilbert K.; Nyberg, Paul M.; and Buchholz, Matthew, 4,356,611, Cl. 29-157.00R.

Nylen, George C.: *See*—
Osterman, Harry F.; and Nylen, George C., 4,357,212, Cl. 202-170.000.

O.K. Tool Company, Inc., The: *See*—
Hollis, Thomas, Jr.; and Armstrong, Harold F., 4,357,122, Cl. 407-42.000.

Oas, David C.; and Clairmont, Delore M., to Deacon Machinery, Inc. Method of making clear transparent polypropylene containers. 4,357,288, Cl. 264-40.600.

Obata, Tetsuo: *See*—
Kawata, Yukio; Obata, Tetsuo; Keino, Chouji; and Tayama, Isamu, 4,357,513, Cl. 219-10.55B.

Obermayer, Arthur S.; and Nichols, Larry D., to Moleculon Research Corporation. Vapor dispenser and method of making same. 4,356,969, Cl. 239-6.000.

Obidin, Valery Y.: *See*—
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Obidin, Valery Y.; Pogorelova, Iraida S.; Ogy, Grigory E.; Vainshtein, Leonid A.; and Pann, Lazar A., 4,356,759, Cl. 91-31.000.

O'Brien, Kenneth J. Twirling disc. 4,356,660, Cl. 46-60.000.

Occidental Oil Shale, Inc.: *See*—
Siegel, Martin M., 4,357,051, Cl. 299-2.000.

Occidental Research Corporation: *See*—
Che, Stanley C., 4,357,228, Cl. 208-8.00R.
Kuehn, Christa G.; and Leder, Frederic, 4,357,217, Cl. 204-84.000.
La Mori, Phillip N.; and Zahradnik, Raymond L., 4,357,214, Cl. 203-100.000.

Odaka, Kentaro, to Sony Corporation. Method for detecting vertical synchronizing signal. 4,357,630, Cl. 358-154.000.

Odell, Norman R.: *See*—
Alverson, Frederick C.; MacMurtrie, Edward D.; and Odell, Norman R., 4,357,669, Cl. 364-500.000.

O'Donnell, John P.: *See*—
Fedan, Jeffrey S.; O'Donnell, John P.; and Hogaboom, G. Kurt, 4,357,341, Cl. 424-273.00R.

Oetiker, Hans. Hose coupling. 4,357,037, Cl. 285-314.000.

Oexler, Rudolf: *See*—
Karl, Rupert; Oexler, Rudolf; Schuller, Edmund; Braun, Erwin; Bock, Erick; and Schreyer, Franz, 4,356,691, Cl. 57-263.000.

Ogawa Chemical Industries, Ltd.: *See*—
Nagai, Masahiko, 4,357,117, Cl. 401-68.000.

Ogawa, Shoichi, to Asahi Glass Company Ltd. Guest-host liquid crystal display devices with silane surfactant. 4,357,374, Cl. 428-1.000.

Oguchi, Yuhei, to Shinshu Seiki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Printer control assembly. 4,357,116, Cl. 400-184.000.

Ogy, Grigory E.: *See*—
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Obidin, Valery Y.; Pogorelova, Iraida S.; Ogy, Grigory E.; Vainshtein, Leonid A.; and Pann, Lazar A., 4,356,759, Cl. 91-31.000.

Ohkoshi, Fumihiko: *See*—
Tomita, Tamaki; Munekata, Kenichi; Ohkoshi, Fumihiko; and Hasegawa, Toshifumi, 4,356,621, Cl. 29-568.000.

Ohnmacht, Helmut; and Meywald, Klaus, to Fritz Eichenauer, Firma. Electrical heating device for fluid media. 4,357,521, Cl. 219-375.000.

Ohno, Osamu, to Japan Servo Co. Direct current brushless electric motor. 4,357,563, Cl. 318-254.000.

Oien, Ewald: *See*—
Gundersen, George; Oien, Ewald; Eide, Ragnar; Wersland, Palmer; Borgersen, Kristian; Kloster, Paul, deceased; and Johnsen, Ketil, executor, 4,356,596, Cl. 17-58.000.

Ojima, Masahiro: *See*—
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Shigematsu, Kazuo; Ojima, Masahiro; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,357,616, Cl. 346-135.100.

Okabe, Shinsei: *See*—
Murata, Michihiro; and Okabe, Shinsei, 4,357,426, Cl. 501-135.000.

Okada, Kenichi: *See*—
Sado, Ryoichi; and Okada, Kenichi, 4,357,266, Cl. 252-512.000.

Okamoto, Takeshi: *See*—
Minagawa, Shoichi; Sakai, Takamasa; Okamoto, Takeshi; and Niimi, Morihiro, 4,357,553, Cl. 310-313.00B.

Okazaki, Shizuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Dehydrator. 4,356,711, Cl. 68-23.500.

Oki, Shuichiro; and Mase, Syunzo, to NGK Insulators Ltd. Oxygen sensing device. 4,357,223, Cl. 204-195.00S.

Oki, Toshiyuki: *See*—
Nishimoto, Koji; Higuchi, Kenji; Oki, Toshiyuki; and Machida, Nobuo, 4,357,512, Cl. 219-8.500.

Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, to Honda Giken Kogyo Kabushiki Kaisha. Method and apparatus for forge-shaping sheet members. 4,356,717, Cl. 72-342.000.

Okuno, Takeshi: *See*—
Kasamatsu, Kiyoshi; Hirano, Masachika; and Okuno, Takeshi, 4,357,348, Cl. 424-300.000.

Okura, Zenichi; Haneishi, Yasuyuki; and Kohmoto, Shinsuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electrical contact arrangement for photographic camera with interchangeable lens. 4,357,089, Cl. 354-286.000.

Okuya, Tsutae, to Alps Electric Company, Ltd. Variable resistor and switch assembly. 4,357,592, Cl. 338-198.000.

Okuyama, Kiyotaka: *See*—
Hosaka, Akihiko; and Okuyama, Kiyotaka, 4,357,391, Cl. 428-413.000.

Olin Corporation: *See*—
Gray, Thomas J., 4,357,227, Cl. 204-290.00R.
Knollmueller, Karl O., 4,357,473, Cl. 556-416.000.
Winter, Joseph, 4,356,861, Cl. 164-462.000.

Olivier, James P.: *See*—
Brown, Carole E.; Ball, Dean M.; Killip, Graham R.; and Olivier, James P., 4,356,727, Cl. 73-243.000.

Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Dobhan, Herbert; and Horling, Peter, to SKF Kugellagerfabriken GmbH. Antifriction bearing for longitudinal movements of a shaft. 4,357,056, Cl. 308-6.00C.

Olsen, Robert C.; and Weaver, William N., to Illinois Tool Works Inc. Asymmetric container carrier stock. 4,356,914, Cl. 206-150.000.

Olsen, William G.: *See*—
McGann, Timothy W.; and Olsen, William G., 4,357,193, Cl. 156-286.000.

Olsson, Billy E.: *See*—
Kam, Lit-Yan; and Olsson, Billy E., 4,357,065, Cl. 339-97.00R.

Olympus Optical Co., Ltd.: *See*—
Kubota, Tetsumaru, 4,356,826, Cl. 128-630.000.
Sugawa, Kazuo; and Amemiya, Norio, 4,357,095, Cl. 355-3.00R.

Ono, Sekijyuro: *See*—
Kuroda, Masao; Ono, Sekijyuro; Kondo, Toshio; and Ichikawa, Noriyoshi, 4,357,690, Cl. 367-8.700.

Onodera, Akira: *See*—
Watanabe, Yoshiaki; Yokoo, Chihiro; Asaka, Toshifumi; Onodera, Akira; Sota, Kaoru; and Sawada, Jiro, 4,357,470, Cl. 544-27.000.

Or, Michael C. P. Printing system for multiple character languages and elements thereof. 4,357,115, Cl. 400-110.000.

Orth, Winfried; Lange, Fritz W.; and Fickert, Werner, to Rutgerswerke Aktiengesellschaft. Novel process for the preparation of N,N'-bisacyl hydrazides. 4,357,277, Cl. 260-326.250.

Osaka Soda Co. Ltd.: *See*—
Matoba, Yasuo, 4,357,446, Cl. 525-281.000.

Osawa, Sadao; Taguchi, Seiichi; and Honjo, Satoru, to Fuji Photo Film Co., Ltd. Process for forming a lithographic printing plate by electrophotography. 4,357,404, Cl. 430-49.000.

Ose, Earl E.; and Kirst, Herbert A., to Eli Lilly and Company. Methods of controlling Pasteurella infections. 4,357,325, Cl. 424-180.000.

Oshida, Hidetaka: *See*—
Miyoshi, Takeshi; Takeuchi, Koji; Nukui, Tatsuo; and Oshida, Hidetaka, 4,357,434, Cl. 524-178.000.

Osterman, Harry F.; and Nylen, George C., to Allied Chemical Corporation. Energy efficient apparatus for vaporizing a liquid and condensing the vapors thereof. 4,357,212, Cl. 202-170.000.

Ostertag, Klaus: *See*—
Mankel, Siegfried; Ostertag, Klaus; and Schreyer, Heinz, 4,357,071, Cl. 350-6.800.

Ostrowski, John S.: *See*—
Grunewalder, John F.; Essary, William A.; and Ostrowski, John S., 4,357,396, Cl. 428-626.000.

Owada, Mitsutoshi: *See*—
Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,357,085, Cl. 354-25.000.

Owens-Corning Fiberglas Corporation: *See*—
Sheeler, Scott O.; Bush, Howard B.; and Kiproff, Peter N., 4,357,155, Cl. 65-10.100.

Owens-Illinois, Inc.: *See*—
Go, Santos W.; and Burzynski, Dennis J., 4,357,461, Cl. 524-724.000.
Spanoudis, Louis, 4,356,815, Cl. 126-443.000.
Oxford Industries, Inc.: *See*—
Hamilton, C. Ray; Mitchell, William O.; and Ellington, Gordon H., 4,356,744, Cl. 83-24.000.
Ozaki, Kiyotaka; and Matsui, Michikage, to Teijin Limited. Antistatic polyester fibers. 4,357,390, Cl. 428-398.000.
Pace, John E.: *See*—
Kappenhagen, George A.; Martin, Niles J.; Pace, John E.; Sette, Robert A.; Randall, Charles E.; Jackson, Leigh F.; and Bains, Gurdip S., 4,356,895, Cl. 187-17.000.
Pako Corporation: *See*—
Gaskell, Alfred J., 4,356,946, Cl. 226-117.000.
Pallares-Martinez, Jose L.; and Pallares-Osorio, Jose. Thermal regulator for fuel and air to a carburetor. 4,357,285, Cl. 261-145.000.
Pallares-Osorio, Jose: *See*—
Pallares-Martinez, Jose L.; and Pallares-Osorio, Jose, 4,357,285, Cl. 261-145.000.
Pallos, Ferenc M.: *See*—
Chin, Hsiao-Ling M.; and Pallos, Ferenc M., 4,357,346, Cl. 424-298.000.
Palmguard, Inc.: *See*—
Butler, Marlow D., 4,357,597, Cl. 340-146.30E.
Palone, Chester: *See*—
Palone, Richard D., 4,357,064, Cl. 339-89.00R.
Palone, Richard D., to Morris Oil Field Supply Co.; and Palone, Chester, part interest to each. Equalizing electrical connection for inside a pipe. 4,357,064, Cl. 339-89.00R.
Pampalone, Thomas R.: *See*—
Kilichowski, Kurt B.; and Pampalone, Thomas R., 4,357,369, Cl. 427-90.000.
Pan Electric Corporation: *See*—
Cornell, Paul V.; and Cornell, Paul A., 4,357,068, Cl. 339-266.00R.
Panchetti, Benito, to POLIMAC S.A.S. di Pelissero-Panchetti & C. Radial gasket with protruding lip portion. 4,357,026, Cl. 277-153.000.
Pann, Lazar A.: *See*—
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Obidin, Valery Y.; Pogorelova, Iraida S.; Ogy, Grigory E.; Vainshtein, Leonid A.; and Pann, Lazar A., 4,356,759, Cl. 91-31.000.
Panstruga, Karl H.: *See*—
Comberg, Albert; and Panstruga, Karl H., 4,357,367, Cl. 427-64.000.
Paramount Health Equipment Corporation: *See*—
Voris, Harvey C., 4,357,011, Cl. 272-118.000.
Parker, John J.: *See*—
Fouss, James L.; Parker, John J.; and Sting, Donald W., 4,357,190, Cl. 156-244.130.
Parks, Robert G.: *See*—
Blincow, Donald W.; and Parks, Robert G., 4,356,874, Cl. 177-210.0FP.
Parson, Larry T.: *See*—
Worth, Robert N.; and Parson, Larry T., 4,356,984, Cl. 244-1.0TD.
Patat, Jean-Louis: *See*—
Guillemin, Genevieve; Patat, Jean-Louis; and Patel, Alain, 4,356,572, Cl. 3-1.900.
Patel, Alain: *See*—
Guillemin, Genevieve; Patat, Jean-Louis; and Patel, Aiain, 4,356,572, Cl. 3-1.900.
Patentverwertungs-und Finanzierungsgesellschaft SERANIA AG: *See*—
Schmid, August, 4,356,987, Cl. 248-73.000.
Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., to Paton, H. Neil; and Skilling, John B. Damped railway car suspension. 4,356,775, Cl. 105-218.00A.
Pattanaik, Surya, to GTE Products Corporation. Brazing alloy filler for joining cemented carbide to steel. 4,357,299, Cl. 420-487.000.
Patterson, Adolphus: *See*—
Eckels, Phillip W.; Litz, Donald C.; and Patterson, Adolphus, 4,356,700, Cl. 62-55.000.
Pawloski, Chester E., to Dow Chemical Co., The. Heterocyclic substituted triazolyl phosphorous compounds and their use as insecticides. 4,357,327, Cl. 424-200.000.
Pawloski, Chester E., to Dow Chemical Co., The. Heterocyclic substituted triazolyl phosphorous compounds and their use as insecticides. 4,357,328, Cl. 424-200.000.
Payne, Frank, to Robertshaw Controls Company. Temperature responsive electrical switch construction, parts therefor and methods of making the same. 4,357,589, Cl. 337-315.000.
Payne, Raymond H.: *See*—
Mealing, Barrie E.; and Payne, Raymond H., 4,356,589, Cl. 15-320.000.
Pearson, William N.: *See*—
Cloud, David A.; Cloud, Charles E.; Pearson, William N.; and Hartman, Donn A., 4,357,359, Cl. 426-103.000.
Peckmann, Heinz: *See*—
Daude, Otto; and Peckmann, Heinz, 4,356,886, Cl. 181-250.000.
Pegasus Sewing Machine Mfg. Co., Ltd.: *See*—
Ueyama, Yoshinari; Mori, Kikuo; and Matsushita, Hideo, 4,356,782, Cl. 112-197.000.
Pegels, Abraham A.; and van Kessel, Matheus M., to Shell Oil Company. Moving catalyst bed reactor. 4,357,304, Cl. 422-191.000.
Pellaux, Jean-Paul: *See*—
Tschirren, Jean D.; Widmer, Gilbert C.; Pellaux, Jean-Paul; Coche, Andre; and Samsel, Marcel R., 4,357,106, Cl. 356-44.000.
Pelton, John F., to Union Carbide Corporation. Apparatus for refining molten metal. 4,357,004, Cl. 266-225.000.
Penn, James F. Wave-motor system. 4,357,543, Cl. 290-53.000.
Pentel Kabushiki Kaisha: *See*—
Murakami, Nobuyuki; and Miyashita, Hiroshi, 4,357,431, Cl. 523-161.000.
PepsiCo. Inc.: *See*—
Simon, Donald R.; and Porrazzo, Salvatore P., 4,356,937, Cl. 222-129.200.
Peritz, Lyonel: *See*—
Grollier, Jean-Francois; Monnais, Christian; and Peritz, Lyonel, 4,357,141, Cl. 8-406.000.
Perkin-Elmer Corp., The: *See*—
Schwartz, Arnold; and Delany, Edward B., 4,357,668, Cl. 364-497.000.
Perrella, Guido; and Thompson, William E., to DBM Industries Limited. Die casting machine. 4,356,858, Cl. 164-154.000.
Pertec Computer Corporation: *See*—
Delury, Dale E., 4,357,707, Cl. 375-119.000.
Peters, Horst: *See*—
Alberts, Heinrich; Fischer, Winfried; Muller, Friedemann; Peters, Horst; Leuschke, Christian; and Baasch, Hans-Peter, 4,357,267, Cl. 524-40.000.
Peters, Roswell D. M., to United States of America, Army. Hexagonal quartz resonator. 4,357,554, Cl. 310-367.000.
Petersen, Burdette A.: *See*—
Kidd, Arthur H.; and Petersen, Burdette A., 4,357,126, Cl. 414-46.000.
Peterson, Per V.; and Hoglund, Hans E., to SCA Development Aktiebolag. Method of making pulp. 4,357,208, Cl. 162-23.000.
Peterson, Robert R.; and Ventura, Daniel S., to Barry Wright Corporation. Laminated bearing with improved low temperature operating characteristics. 4,357,057, Cl. 308-26.000.
Pfizer Inc.: *See*—
Kraska, Allen R.; and Lombardino, Joseph G., 4,357,332, Cl. 424-250.000.
Pharmindustrie: *See*—
Dubroeucq, Marie-Christine; Gueremy, Claude G. A.; Renault, Christian L. A.; and Le Fur, Gerard R., 4,357,337, Cl. 424-267.000.
Philberth, Bernhard: *See*—
Philberth, Karl; and Philberth, Bernhard, 4,357,587, Cl. 336-212.000.
Philberth, Karl; and Philberth, Bernhard, to Sawatzky, Wilfried Ernst. Core laminations, particularly for transformers. 4,357,587, Cl. 336-212.000.
Philipon, Paul: *See*—
Aubry, Michel; Bernard, Jean-Claude; and Philipon, Paul, 4,357,210, Cl. 202-85.000.
Phillips, Curtis D.; Davis, Larry R.; and Phillips, Kenneth E. Electric newspaper log roller machine. 4,357,140, Cl. 493-307.000.
Phillips, Kenneth E.: *See*—
Phillips, Curtis D.; Davis, Larry R.; and Phillips, Kenneth E., 4,357,140, Cl. 493-307.000.
Phillips Petroleum Company: *See*—
Furr, Danny L., 4,356,863, Cl. 165-1.000.
McDaniel, Max P., 4,357,451, Cl. 526-106.000.
Scott, Richard L., 4,357,143, Cl. 23-230.00R.
Wu, Yulin; and Zuech, Ernest A., 4,357,257, Cl. 252-308.000.
Phillips, Richard A.: *See*—
Haddad, Theodore A.; Kondig, Walter; and Phillips, Richard A., 4,357,295, Cl. 264-341.000.
Phillips, William L. Container for spherical objects. 4,356,915, Cl. 206-315.00B.
Picker Corporation: *See*—
Hunt, Robert P.; Geither, John D.; and Hrdlicka, Victor J., 4,357,538, Cl. 378-175.000.
Pierce, Zona R.; and Frank, David S., to Eastman Kodak Company. Element, structure and method for the analysis or transport of liquids. 4,357,363, Cl. 427-2.000.
Pilarski, Klemens; Ulczok, Stefan; Walkiewicz, Stanislaw; and Rudnicki, Wincenty, to Centrum Konstrukcyjno-Technologiczne Maszyn Gorniczynch "KOMAG". Device for directing the rack. 4,357,052, Cl. 299-42.000.
Pioneer Electronic Corporation: *See*—
Tsuchiya, Yukio; and Shimada, Kunihiko, 4,357,498, Cl. 179-115.5DV.
Piper, William W., to General Electric Company. Fluorescent lamp utilizing phosphor combination. 4,357,559, Cl. 315-248.000.
Pippa, Roberto; De Toffol, Andrea; Lepori, Agostino; and Mara, Luigi, to Montedison S.p.A. Process for the agglomeration of rubber latexes. 4,357,270, Cl. 523-335.000.
Pitney Bowes Inc.: *See*—
Zepko, Richard F., 4,357,094, Cl. 355-3.0FU.
Plancon, Michel; Migeon, Jean-Pierre; and Grand Chavin, Paul, to Timex Corporation. Electronic hour timesetting device for electronic analog timepiece. 4,357,693, Cl. 368-187.000.
Plessey Handel und Investments AG: *See*—
Goodfellow, Robert C.; and Carter, Andrew C., 4,357,072, Cl. 350-96.200.
Pobortsev, Mendel E.: *See*—
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko,

Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.

Pogorelova, Iraida S.: *See*—
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Obidin, Valery Y.; Pogorelova, Iraida S.; Ogy, Grigory E.; Vainshtein, Leonid A.; and Pann, Lazar A., 4,356,759, Cl. 91-31.000.

Polaroid Corporation: *See*—
Bendoni, Leonard V.; and Hanna, William L., 4,357,091, Cl. 354-304.000.
Johnson, Bruce K.; and Whiteside, George D., 4,357,083, Cl. 354-22.000.

POLIMAC S.A.S. di Pelissero-Panchetti & C.: *See*—
Panchetti, Benito, 4,357,026, Cl. 277-153.000.

Poll, Marian. Ellipsograph. 4,356,633, Cl. 33-51.000.

Pollitt, Thomas B., to Newage Kitchens Limited. Furniture fitting. 4,357,119, Cl. 403-231.000.

Polson, Alfred, to South African Inventions Development Corporation, The. Recovering purified antibodies from egg yolk. 4,357,272, Cl. 260-112.00R.

Polymer Technology Corporation: *See*—
Rosenthal, Perry; and Mager, Louis, 4,357,173, Cl. 134-6.000.

Polysar Limited: *See*—
Edwards, Douglas C., 4,357,432, Cl. 523-351.000.

Pomerantzeff, Oleg, to United States of America, Health and Human Services. Macula-disc camera with improved resolution. 4,357,088, Cl. 354-62.000.

Poot, Albert L.: *See*—
Vermeulen, Leon L.; Poot, Albert L.; and Van den Houte, Jozef W., 4,357,407, Cl. 430-204.000.

Porrazzo, Salvatore P.: *See*—
Simon, Donald R.; and Porrazzo, Salvatore P., 4,356,937, Cl. 222-129.200.

Porter, James H.; Davis, Robert; and Zakaria, Jehangir, to Energy Resources Company, Inc. Fluidized bed solids feed. 4,356,779, Cl. 110-245.000.

Possati, Mario. Gauge for checking geometrical linear dimensions of mechanical pieces. 4,356,634, Cl. 33-169.00R.

Potaczek, Jan J., to Advance Tapes (U.K) Limited. Article of manufacture having adhesive properties. 4,356,819, Cl. 128-156.000.

Powell Industries, Inc.: *See*—
Friedland, Harry; and Langill, Addison W., Jr., 4,356,840, Cl. 137-487.500.

PPG Industries, Inc.: *See*—
Grunewalder, John F.; Essary, William A.; and Ostrowski, John S., 4,357,396, Cl. 428-626.000.
Hillman, Patrick E., 4,357,444, Cl. 525-232.000.
Seymour, Samuel L., 4,357,156, Cl. 65-104.000.

Preslar, Donald R., to RCA Corporation. Circuit arrangement using emitter coupled logic and integrated injection logic. 4,357,548, Cl. 307-475.000.

Presto Lock, Inc.: *See*—
Bako, Lazlo, 4,356,712, Cl. 70-69.000.

Prewo, Karl M.: *See*—
Stalcup, Robert K.; and Prewo, Karl M., 4,357,286, Cl. 264-1.200.

Priestly, William J.; and McLoughlin, Nelson E. Method of bonding plastic to metal and container formed thereby. 4,356,926, Cl. 220-67.000.

Procter & Gamble Company, The: *See*—
McKibben, Gary E.; and Helseth, Mary Jo, 4,356,817, Cl. 128-127.000.

Progressive Development, Inc.: *See*—
Duske, Wilfried P.; and Frank, Lowell C., 4,357,152, Cl. 55-257.00C.

Propst, Robert L.; Wodka, Michael A.; and Hodges, Ronald R., to Herman Miller, Inc. Free-standing space divider assembly with acoustic upper end border. 4,356,674, Cl. 52-242.000.

Pross, Wilhelm: *See*—
Nicklaus, Eberhard; Warncke, Heinz; Pross, Wilhelm; and Hartl, Wolfgang, 4,357,300, Cl. 422-62.000.

Protell, Martin R.; and Ward, Howard L. Hygienic dental appliance. 4,356,585, Cl. 15-111.000.

Pugh, Gary W.: *See*—
Turnbull, William S.; and Pugh, Gary W., 4,356,835, Cl. 137-117.000.

Puglia, Wayne J.: *See*—
Kehoe, Gary; Puglia, Wayne J.; Witzel, Frank; Friello, Dominick R.; and Mackay, Donald A. M., 4,357,354, Cl. 426-3.000.

Pujol, Carlos: *See*—
Zurcher, Edwin; Negaty-Hindi, Guy; and Pujol, Carlos, 4,356,688, Cl. 57-22.000.

Quality Valve and Machine Works, Inc.: *See*—
Beffano, John J., 4,356,997, Cl. 251-214.000.
Linder, Morris B.; and Beffano, John J., 4,356,996, Cl. 251-82.000.

Queen's University at Kingston: *See*—
van Eyken, Lawrence A. J., 4,356,773, Cl. 105-26.100.

Quehen, Andre, to SECIM. Apparatus for detecting faults in the inherent flatness of a stretched strip in movement. 4,356,714, Cl. 72-17.000.

Quinkert, Gerhard; Weber, Wolf-Dietrich; and Schwartz, Ulrich, to Hoechst Aktiengesellschaft. Process for synthesizing estrone or estrone derivatives. 4,357,278, Cl. 260-397.450.

Racal-Mesl Limited: *See*—
Butler, Michael B. N.; Jacobs, Walter W.; and Grant, Peter M., 4,357,709, Cl. 455-20.000.

Ragland, Evan L., to Algographic Associates. Electrostatic imaging apparatus. 4,357,618, Cl. 346-159.000.

Railgon Company: *See*—
Brodeur, Rene H.; and Terlecky, Boris S., 4,356,776, Cl. 105-406.00R.

Raj, Kuldip; and Schwartzman, Alan, to Ferrofluidics Corporation. Ferrofluid rotary-shaft seal apparatus and method. 4,357,021, Cl. 277-1.000.

Raj, Kuldip, to Ferrofluidics Corporation. Ferrofluid rotary-shaft seal apparatus and method. 4,357,022, Cl. 277-1.000.

Raj, Kuldip, to Ferrofluidics Corporation. Ferrofluid rotary-shaft seal apparatus and method. 4,357,024, Cl. 277-1.000.

Randall, Charles E.: *See*—
Kappenhagen, George A.; Martin, Niles J.; Pace, John E.; Sette, Robert A.; Randall, Charles E.; Jackson, Leigh F.; and Bains, Gurdip S., 4,356,895, Cl. 187-17.000.

Ransburg Corporation: *See*—
Bentley, Stanley L.; and Bloomer, Frank A., 4,356,868, Cl. 169-26.000.

Raptis, Apostolos C.: *See*—
Roach, Paul D.; and Raptis, Apostolos C., 4,357,603, Cl. 340-627.000.

Ratcliffe, Ronald W.: *See*—
Christensen, Burton G.; and Ratcliffe, Ronald W., 4,357,342, Cl. 424-274.000.

Rath, Lee A.; Sidline, George; and Zhabokrug, Ilya, to Service Distributors, Inc. Guide for encoded magnetic card for machine actuator. 4,357,532, Cl. 235-483.000.

Rattner, Manfred, to Siemens Aktiengesellschaft. X-ray diagnostic generator comprising radiation shielding surrounding the x-ray tube. 4,357,537, Cl. 378-103.000.

Ray, Leonard N., Jr.: *See*—
Buckwalter, Mervin R.; and Ray, Leonard N., Jr., 4,357,189, Cl. 156-230.000.

Raymond, Edward L.: *See*—
Becker, James R.; and Raymond, Edward L., 4,356,612, Cl. 29-157.10R.

RCA Corporation: *See*—
Armstrong, Lee R., 4,356,725, Cl. 73-118.000.
Barkow, William H.; and Gross, Josef, 4,357,586, Cl. 335-211.000.
Brooks, William C., 4,357,216, Cl. 204-5.000.
Burke, Thomas P., 4,357,556, Cl. 313-440.000.
Dischert, William A., 4,357,641, Cl. 360-130.230.
French, Michael P., 4,357,632, Cl. 358-193.100.
Hinn, Werner, 4,357,623, Cl. 358-18.000.
Kilichowski, Kurt B.; and Pampalone, Thomas R., 4,357,369, Cl. 427-90.000.
Kimbrough, Laurence B., 4,356,845, Cl. 140-93.200.
Longsderff, Richard W.; and Henry, Dale V., 4,357,368, Cl. 427-74.000.
Mawhinney, Daniel D., 4,357,580, Cl. 331-1.00R.
Preslar, Donald R., 4,357,548, Cl. 307-475.000.
Torrington, Leslie A., 4,357,698, Cl. 369-77.000.
Wharton, James H., 4,357,628, Cl. 358-317.000.
Zelez, Joseph, 4,357,203, Cl. 156-643.000.

Rebourg, Jean-Claude. Hadamard converters employing charge transfer devices. 4,357,677, Cl. 364-826.000.

Rechtorik, Stephen M.: *See*—
Gerding, Charles C.; and Rechtorik, Stephen M., 4,357,125, Cl. 410-44.000.

Reed, James P.: *See*—
Gooden, Eldon D.; and Reed, James P., 4,357,128, Cl. 414-156.000.

Reed, Kenneth J.; Saturno, Patrick H.; and Ducharme, Gerald L., to Eastman Kodak Company. Coversheet for color transfer assemblages. 4,357,392, Cl. 428-522.000.

Reeves, Clifford A.: *See*—
Wenger, Clayton P.; and Reeves, Clifford A., 4,356,836, Cl. 137-232.000.

Regie Nationale des Usines Renault: *See*—
Labaune, Camille; and Leconte, Gilles, 4,357,507, Cl. 200-61.270.

Regnault, Alain: *See*—
Sachetto, Jean-Pierre; Michel, Jean-Pierre; Cuccolo, Sergio; and Regnault, Alain, 4,357,467, Cl. 536-56.000.

Rehme, Wolfgang: *See*—
Trekel, Rainer; Lorenzen, Uwe; Rehme, Wolfgang; Durr, Rolf; Litschko, Hans G.; and Thiele, Wilfried, 4,356,654, Cl. 43-9.000.

Reicherts, James E., to United States Gypsum Company. Tie-down runner for mobile home wall construction. 4,356,675, Cl. 52-264.000.

Reichhold Chemicals, Inc.: *See*—
Amundsen, Joseph; Goodwin, Robert J.; and Wetzel, William H., 4,357,163, Cl. 106-18.350.

Reidt, Dean K.: *See*—
Larson, Roderick W.; and Reidt, Dean K., 4,356,599, Cl. 24-16.0PB.

Reinchr, Dieter; Hugelin, Bernard; and Troxler, Eduard, to Ciba Geigy Corporation, N.Y. Nonylamines. 4,357,476, Cl. 564-509.000.

Rekers, John W.: *See*—
Wilson, R. Marshall; and Rekers, John W., 4,357,339, Cl. 424-273.00P.

Rekow, Vernon C., to Champion International Corporation. Stackable tray with corner supports. 4,356,952, Cl. 229-34.00R.

Rekow, Vernon C., to Champion International Corporation. Tray cover with support ledges. 4,356,953, Cl. 229-34.00R.

Remo, Inc.: *See*—
Hartry, Donald R., 4,356,756, Cl. 84-418.000.

Renault, Christian L. A.: *See*—
Dubroeucq, Marie-Christine; Gueremy, Claude G. A.; Renault, Christian L. A.; and Le Fur, Gerard R., 4,357,337, Cl. 424-267.000.

Republic Tool & Manufacturing Corporation: *See*—
McRoskey, John W.; and Swartz, Delbert D., 4,356,941, Cl. 222-632.000.

Research Corporation: *See*—
Wilson, R. Marshall; and Rekers, John W., 4,357,339, Cl. 424-273.00P.

Research Foundation of the State Univ. of NY: *See*—
Rushbrook, Julie I.; and Feinman, Reichard D., 4,357,174, Cl. 134-10.000.

Ressmeyer, James; Marriott, Joe E.; and Jones, Lawrence T., to Hewlett-Packard Company. Multislope converter and conversion technique. 4,357,600, Cl. 340-347.0NT.

Reynolds Metals Company: *See*—
Mortimer, David B., 4,356,884, Cl. 181-200.000.

Rhoades, George D.: *See*—
Tyree, Lewis, Jr.; Missig, James R.; and Rhoades, George D., 4,356,707, Cl. 62-381.000.

Rhone-Poulenc-Textile: *See*—
Biot, Bernard; and Blanc, Charles, 4,356,603, Cl. 28-255.000.

Rical S.A.: *See*—
Fitte, Daniel, 4,356,939, Cl. 222-541.000.

Richardson, Edwin A.: *See*—
Berkshire, David C.; Lawson, Jimmie B.; and Richardson, Edwin A., 4,357,248, Cl. 252-8.55B.

Richardson-Vicks Inc.: *See*—
Shah, Nutan B.; and Schmidt, Nicholas F., 4,357,318, Cl. 424-52.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See*—
Takacs, Istvan; Felmeri, Jozsef; Kerey, Gyorgy; Rudolf, Peter; Banos, Zoltan; Vereczkey, Endre; and Bosits, Gyula, 4,357,306, Cl. 422-254.000.

Ricoh Company, Ltd.: *See*—
Hasegawa, Takashi, 4,357,635, Cl. 360-51.000.

Ricouard, Jean-Pierre: *See*—
Coulmance, Jean-Pierre R.; and Ricouard, Jean-Pierre, 4,357,652, Cl. 362-276.000.

Riedl, Franz, to Wacker-Werke GmbH & Co. KG. Imbalance-oscillation exciter. 4,356,736, Cl. 74-61.000.

Riegel, Ulrich: *See*—
Engelhardt, Friedrich; Riegel, Ulrich; Hille, Martin; and Wittkus, Heinz, 4,357,245, Cl. 252-8.50C.

Rieker, Lorra L.: *See*—
Sheibley, Dean W.; Rieker, Lorra L.; Hsu, Li-Chen; and Manzo, Michelle A., 4,357,402, Cl. 429-206.000.

Riguez Associates: *See*—
Trujillo, Jose A., 4,357,169, Cl. 106-281.00R.

Riker Laboratories, Inc.: *See*—
Moore, George G. I., 4,357,345, Cl. 424-285.000.

Rilett, John W. Gas condensation. 4,356,699, Cl. 62-54.000.

Rind, Bruce. Airway. 4,356,821, Cl. 128-207.140.

Ringbloom, Vernon D., to United States of America, Navy. Process for coating crystalline explosives with polyethylene wax. 4,357,185, Cl. 149-6.000.

Rinno, Helmut: *See*—
Mondt, Josef; and Rinno, Helmut, 4,357,455, Cl. 528-73.000.

Rizzo, Thomas: *See*—
Ayoub, Stephen J.; MacPherson, Douglas; and Rizzo, Thomas, 4,356,724, Cl. 73-118.000.

RM Industrial Products Company, Inc.: *See*—
Zucker, Jerry; Chivers, Carl E.; and Jefferson, Donald E., 4,357,436, Cl. 524-448.000.

Roach, Paul D.; and Raptis, Apostolos C., to United States of America, Energy. Method and apparatus for acoustically monitoring the flow of suspended solid particulate matter. 4,357,603, Cl. 340-627.000.

Robbins, Richard E.; and Simpson, Robert D., to Boeing Company, The. Method and apparatus for aircraft pitch and thrust axes control. 4,357,663, Cl. 364-433.000.

Robert Bosch GmbH: *See*—
Bodig, Bernd; and Jundt, Werner, 4,356,808, Cl. 123-614.000.
Bogner, Karl-Heinz; and Mayer, Martin, 4,356,735, Cl. 74-7.00A.
Dobler, Klaus, 4,356,979, Cl. 239-585.000.
Eblen, Ewald; and Kopse, Odon, 4,356,976, Cl. 239-533.500.
Esper, Friedrich; and Gohl, Walter, 4,356,571, Cl. 3-1.000.
Hachtel, Hansjorg; and Dobler, Klaus, 4,356,732, Cl. 73-862.330.
Hofmann, Karl, 4,356,977, Cl. 239-533.900.
Krauss, Rudolf, 4,356,978, Cl. 239-533.120.
Krauss, Rudolf, 4,356,980, Cl. 239-585.000.
Leiber, Heinz, 4,357,054, Cl. 303-10.000.
Leiber, Heinz; and Mergenthaler, Robert, 4,357,055, Cl. 303-52.000.
Moser, Theo, 4,357,192, Cl. 156-252.000.
Muller, Klaus; Friese, Karl-Hermann; and Holfelder, Gerhard, 4,356,628, Cl. 29-878.000.

Roberts, Royce G. Gauge for tapered threaded box and pin ends of a joint. 4,356,636, Cl. 33-199.00R.

Robertshaw Controls Company: *See*—
Demi, Roy C., 4,356,625, Cl. 29-622.000.
Payne, Frank, 4,357,589, Cl. 337-315.000.

Robertson, Kenneth L.: *See*—
Smith, Harry B.; Robertson, Kenneth L.; and Smith, Robert T., 4,357,528, Cl. 235-92.0SB.

Robotic Vision Systems, Inc.: *See*—
Stern, Howard K.; Ross, Joseph A.; and Di Matteo, Paul, 4,357,108, Cl. 356-376.000.

Rock, Brian, to Barcrest Limited. Reversible motor. 4,357,567, Cl. 318-687.000.

Rockwell International Corporation: *See*—
Hodson, Donald R., 4,357,303, Cl. 422-159.000.
Hodson, Donald R., 4,357,705, Cl. 372-109.000.
Jones, Addison B., 4,357,364, Cl. 427-43.100.
Koehler, Daniel L.; and Zajac, Walter O., 4,356,901, Cl. 192-70.200.
McGann, Timothy W.; and Olsen, William G., 4,357,193, Cl. 156-286.000.
Scott, Harry A., 4,356,616, Cl. 29-526.00A.

Rockwool Aktiebolaget: *See*—
Hartung, Willy, 4,357,154, Cl. 65-8.000.

Rodda, Donald, to Singer Company, The. Thread handling arrangement for sewing machines. 4,356,781, Cl. 112-184.000.

Roes, John B.; Kelly, Guy M.; Case, Robert F.; and Deming, Chandler R., to Cubic Western Data. Modularized ticket handling system for use in automatic ticket processing system. 4,357,530, Cl. 235-384.000.

Roessler, Bernward, to Siemens Aktiengesellschaft. FET Module with reference source chargeable memory gate. 4,357,571, Cl. 323-281.000.

Rogers Corporation: *See*—
Landi, Vincent R.; and Dalton, Jeffrey L., 4,357,269, Cl. 523-206.000.

Rogers, Walter C., Jr.; and Hoffman, David S. One-way recliner chair. 4,357,049, Cl. 297-75.000.

Rohm and Haas Company: *See*—
Lewis, Sheldon N.; and Haggard, Richard A., 4,357,435, Cl. 524-239.000.
Smolanoff, Joel R., 4,357,471, Cl. 546-16.000.

Rohr Industries, Inc.: *See*—
Lawson, Dale W. R., 4,356,973, Cl. 239-265.310.

Rohrl, Franz: *See*—
Husslein, Julius; Rohrl, Franz; Nitzinger, Karl; and Gerl, Josef, 4,357,522, Cl. 219-400.000.

Rolls-Royce Limited: *See*—
Davinson, Ian, 4,357,104, Cl. 356-4.000.
Jeffery, Graham J.; and Adkins, Richard C., 4,356,693, Cl. 60-39.370.
Savage, Philip, 4,356,859, Cl. 164-244.000.

Romeas, Rene, to Thomson-Brandt. System for broadcasting audio-visual television signals synchronized by a pilot frequency and method for the application of said system. 4,357,626, Cl. 358-335.000.

Rommag P. Worwag & Co.: *See*—
Lude, Ernst, 4,356,591, Cl. 15-326.000.

Rooks, Wendell H., II; Ackerman, Neil R.; and Tomolonis, Albert J., to Syntex (U.S.A.) Inc. Method of preventing, reducing or inhibiting inflammation. 4,357,322, Cl. 424-177.000.

Roper, Charles R., to Roper, William H.; Roper, Robert E.; Roper, Elvere; and Miller, Ralph A., a part interest to each. Container, engagement ring and cover assembly. 4,356,930, Cl. 220-306.000.

Roper, Elvere: *See*—
Roper, Charles R., 4,356,930, Cl. 220-306.000.

Roper, Robert E.: *See*—
Roper, Charles R., 4,356,930, Cl. 220-306.000.

Roper, William H.: *See*—
Roper, Charles R., 4,356,930, Cl. 220-306.000.

Rosander, Jan, to Scania Dental AB. Method particularly intended for separating mercury compounds and mercury alloys in solid particle form from a fluid, and an apparatus for carrying out the method. 4,356,959, Cl. 233-27.000.

Rose, Jack: *See*—
Diamond, Maxwell; and Rose, Jack, 4,356,649, Cl. 40-159.000.

Rose, Robert R.; and Eldredge, Carl H., to Eastman Kodak Company. Acidic adhesive compositions and self-processing photographic products containing same. 4,357,408, Cl. 430-207.000.

Rose, Thomas J.: *See*—
Schmanski, Donald W.; and Rose, Thomas J., 4,357,001, Cl. 256-51.000.

Rosenau, Clifford M., to Armstrong World Industries. Kiln control system. 4,356,641, Cl. 34-46.000.

Rosenberg, Avner: *See*—
Rosenberg, Peretz; and Rosenberg, Avner, 4,356,974, Cl. 239-382.000.

Rosenberg, Peretz; and Rosenberg, Avner. Spray nozzles. 4,356,974, Cl. 239-382.000.

Rosenquist, Niles R., to General Electric Company. Thermoplastic polycarbonate resins reinforced with silane treated fillers. 4,357,271, Cl. 523-212.000.

Rosenthal, Perry; and Mager, Louis, to Polymer Technology Corporation. Lens cleaning and polishing method. 4,357,173, Cl. 134-6.000.

Rosli, Walter, to Contraves AG. Flight trajectory and observation theodolite. 4,357,107, Cl. 356-147.000.

Ross, Joseph A.: *See*—
Stern, Howard K.; Ross, Joseph A.; and Di Matteo, Paul, 4,357,108, Cl. 356-376.000.

Rost, Jurgen: *See*—
Muller-Kuhn, Helmut; Scharren, Gunter; Kohlmeier, Wilfried; Grillo, Michael; and Rost, Jurgen, 4,356,929, Cl. 220-270.000.

Rothman, Edward A.: *See*—
Andrews, Merritt B.; and Rothman, Edward A., 4,356,678, Cl. 52-799.000.

Roussel Uclaf: *See*—
Herve, Jean J.; and Smolikowski, Serge, 4,357,350, Cl. 424-304.000.

Martel, Jacques; Tessier, Jean; Teche, Andre; and Demoute, Jean-Pierre, 4,357,335, Cl. 424-263.000.

Rudnicki, Wincenty: *See*—
Pilarski, Klemens; Ulczok, Stefan; Walkiewicz, Stanislaw; and Rudnicki, Wincenty, 4,357,052, Cl. 299-42.000.

Rudolf, Peter: *See*—
Takacs, Istvan; Felmeri, Jozsef; Kerey, Gyorgy; Rudolf, Peter; Banos, Zoltan; Vereczkey, Endre; and Bosits, Gyula, 4,357,306, Cl. 422-254.000.

Ruehle, William H., to Mobil Oil Corporation. Seismic data gathering method. 4,357,689, Cl. 367-23.000.

Rufford, Roger V., to Fairchild Camera and Instr. Corp. Adaptive word line pull down. 4,357,687, Cl. 365-230.000.

Rugh, Ailsa P., administratrix: *See*—
Rugh II, John L., deceased; and Rugh, Ailsa P., administratrix, 4,357,209, Cl. 376-391.000.

Rugh II, John L., deceased; and Rugh, Ailsa P., administratrix. Nuclear divisional reactor. 4,357,209, Cl. 376-391.000.

Runavot, Yves; Billault, Georges; and Salvetat, Jacques, to National Starch and Chemical Corporation. Resins based on α-methyl styrene, styrene and a phenol. 4,357,459, Cl. 528-205.000.

Rupp Industries, Inc.: *See*—
Beaulieu, Bryan J., 4,356,648, Cl. 40-155.000.

Rupprecht, Hans S.: *See*—
Magdo, Ingrid E.; and Rupprecht, Hans S., 4,357,622, Cl. 357-44.000.

Rushbrook, Julie I.; and Feinman, Reichard D., to Research Foundation of the State Univ. of NY. Slab gel destaining method. 4,357,174, Cl. 134-10.000.

Rutgerswerke Aktiengesellschaft: *See*—
Grigoleit, Georg; Matern, Kurt; Kohler, Helmut; and Collin, Gerd, 4,357,472, Cl. 549-49.00ú.
Orth, Winfried; Lange, Fritz W.; and Fickert, Werner, 4,357,277, Cl. 260-326.250.

Ruthner, Othmar. Plant for the continuous production of green forage. 4,356,664, Cl. 47-65.000.

Rutz, Richard F., to International Business Machines Corporation. Refractory oxide fabrication. 4,357,202, Cl. 156-635.000.

Ruwe, Victor W.: *See*—
White, James W.; Ruwe, Victor W.; and Davis, Donald R., 4,356,721, Cl. 73-40.700.

Sachetto, Jean-Pierre; Michel, Jean-Pierre; Cuccolo, Sergio; and Regnault, Alain, to Battelle Memorial Institute. Depolymerized cellulosic material with low crystallinity obtained from cellulosic fibers and process for its manufacture. 4,357,467, Cl. 536-56.000.

Sado, Ryoichi; and Okada, Kenichi, to Shin-Etsu Polymer Co., Ltd. Flexible resistor compositions. 4,357,266, Cl. 252-512.000.

Sagawa, Nobukazu: *See*—
Yamamoto, Shigeyoshi; Sagawa, Nobukazu; and Nakanishi, Noriyoshi, 4,357,526, Cl. 219-544.000.

Saissline, Robert L.: *See*—
Santora, Frank; and Saissline, Robert L., 4,357,015, Cl. 273-142.00E.

Saito, Shigeki; Koizumi, Osamu; and Kawamata, Syoichi, to Hitachi, Ltd. Control apparatus for variable-speed reversible motor. 4,357,565, Cl. 318-473.000.

Sakai, Masayuki: *See*—
Matsushima, Katsuaki; and Sakai, Masayuki, 4,356,965, Cl. 237-12.30B.

Sakai, Takamasa: *See*—
Minagawa, Shoichi; Sakai, Takamasa; Okamoto, Takeshi; and Niimi, Morihiro, 4,357,553, Cl. 310-313.00B.

Sakai, Takashi: *See*—
Mochida, Naoki; Morifuji, Kazuhiko; and Sakai, Takashi, 4,357,188, Cl. 156-180.000.

Sakaoka, Hiromu; Nakano, Teruyuki; and Ikeda, Shingo, to Honda Giken Kogyo Kabushiki Kaisha. Intake system for use in internal combustion engine. 4,356,798, Cl. 123-52.0MF.

Sakata, Fusao: *See*—
Tanaka, Hiroshi; and Sakata, Fusao, 4,357,196, Cl. 156-345.000.

Sakata Shokai, Ltd.: *See*—
Tsuji, Kunio; Tsuji, Toshiaki; Hayashi, Otugu; and Hayashi, Tsutomu, 4,357,164, Cl. 106-29.000.

Sakurada, Kenichi; and Nishino, Ryuichi, to Nissan Motor Co., Ltd.; and Tachikawa Spring Company Limited. Device for vertically adjusting seat. 4,356,990, Cl. 248-396.000.

Sakurado, Kenichi: *See*—
Uemura, Masahiro; Harada, Chikao; Sakurado, Kenichi; and Kakamu, Tsunehito, 4,356,827, Cl. 128-680.000.

Saltz, Warren L.; and Vezza, Anthony S., to Digital Equipment Corporation. Method and apparatus for disabling and diagnosing cache memory storage locations. 4,357,656, Cl. 364-200.000.

Salvat, Francois; Bouko, Jean; and Coquio, Claude, to Thomson-CSF. Multimode ultrahigh-frequency source and antenna. 4,357,612, Cl. 343-786.000.

Salvetat, Jacques: *See*—
Runavot, Yves; Billault, Georges; and Salvetat, Jacques, 4,357,459, Cl. 528-205.000.

Samsel, Marcel R.: *See*—
Tschirren, Jean D.; Widmer, Gilbert C.; Pellaux, Jean-Paul; Coche, Andre; and Samsel, Marcel R., 4,357,106, Cl. 356-44.000.

Sanches-Galindo, Gustavo A.: *See*—
Cardenas-Franco, Luis; and Sanches-Galindo, Gustavo A., 4,357,157, Cl. 65-164.000.

Sandberg, Glenn A.; Janssen, Wilbur; and Bachmann, Duncan, to Formax, Inc. Method and apparatus for molding food patties. 4,356,595, Cl. 17-45.000.

Sanders Associates, Inc.: *See*—
Baer, Ralph H.; Cope, Leonard D.; Holt, Oliver D.; and Morrison, Howard J., 4,357,014, Cl. 273-85.00G.

Sanders, James M.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,357,246, Cl. 252-8.600.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,357,253, Cl. 252-174.110.

Sanderson, Charles H. Device for the magnetic treatment of water and liquid and gaseous fuels. 4,357,237, Cl. 210-222.000.

Sandford, Paul A.; and Baird, John K., to Merck & Co., Inc. Dispersible xanthan gum composite. 4,357,260, Cl. 252-363.500.

Sandys, Jeffrey P.: *See*—
Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., 4,356,775, Cl. 105-218.00A.

Santora, Frank; and Saissline, Robert L. Roulette game. 4,357,015, Cl. 273-142.00E.

Sapian, Vladimir G.: *See*—
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.

Sapporo Breweries Limited: *See*—
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,357,323, Cl. 424-180.000.

Sasaki, Koichi; Sumida, Yasuji; and Ishida, Hiroshi, to Mita Industrial Company Limited. Mechanism for supporting an original document cover lid of an electrostatic copying apparatus. 4,357,101, Cl. 355-75.000.

Sasaki, Takao: *See*—
Imazeki, Ryoji; Sasaki, Takao; and Yamazaki, Etsuo, 4,357,664, Cl. 364-474.000.

Sato, Hideaki: *See*—
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,356,717, Cl. 72-342.000.

Sato, Kazuo: *See*—
Hamamura, Tamotu; Inoue, Nobuji; and Sato, Kazuo, 4,357,441, Cl. 524-591.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Constant pressure assembly for hand operated label printing machine. 4,356,767, Cl. 101-295.000.

Satoh, Eiji; Matsushita, Tetsuo; Ishida, Atsushi; Ishitobi, Tamio; and Muraoka, Shigemitsu, to Asahi Kasei Kogyo Kabushiki Kaisha. Polymer dope composition, composite fibers made therefrom and process for making same. 4,357,389, Cl. 428-373.000.

Sattlegger, Hans; Schnurrbusch, Karl; Boll, Manfred; and Friemann, Hans, to Bayer Aktiengesellschaft. Coatable water-setting plastic organopolysiloxane molding compositions. 4,357,438, Cl. 524-490.000.

Sattler, Frank A., to Westinghouse Electric Corp. Solventless UV cured thermosetting cement coat. 4,357,219, Cl. 204-159.150.

Saturno, Patrick H.: *See*—
Reed, Kenneth J.; Saturno, Patrick H.; and Ducharme, Gerald L., 4,357,392, Cl. 428-522.000.

Sauer United Kingdom Limited: *See*—
Cameron-Johnson, Alan; and Miles, Michael J., 4,356,761, Cl. 91-490.000.

Savage, Philip, to Rolls-Royce Limited. Lost wax feeder and runner systems. 4,356,859, Cl. 164-244.000.

Savins, Joseph G., to Mobil Oil Corporation. Process of underground coal gasification. 4,356,866, Cl. 166-261.000.

Savit, Joseph: *See*—
Ellis, James B.; Sims, Raymond E.; and Savit, Joseph, 4,356,679, Cl. 53-381.00R.

Sawada, Jiro: *See*—
Watanabe, Yoshiaki; Yokoo, Chihiro; Asaka, Toshifumi; Onodera, Akira; Sota, Kaoru; and Sawada, Jiro, 4,357,470, Cl. 544-27.000.

Sawae, Kiyoshi: *See*—
Inohara, Akio; Sawae, Kiyoshi; Kawaguchi, Masashi; and Isaka, Kinichi, 4,357,557, Cl. 313-509.000.

Sawano, Hiroshi: *See*—
Ishihara, Osamu; Mori, Tetsurou; and Sawano, Hiroshi, 4,357,582, Cl. 331-96.000.

Sawatzky, Wilfried Ernst: *See*—
Philberth, Karl; and Philberth, Bernhard, 4,357,587, Cl. 336-212.000.

SCA Development Aktiebolag: *See*—
Peterson, Per V.; and Hoglund, Hans E., 4,357,208, Cl. 162-23.000.

Scania Dental AB: *See*—
Rosander, Jan, 4,356,959, Cl. 233-27.000.

Schaefer, Edwin M., III: *See*—
Anderson, Thomas W.; Jenness, Robert V.; Milczarek, Richard J.; Schaefer, Edwin M., III; and Stekl, Robert M., 4,357,493, Cl. 179-6.040.

Schall, Roy F., Jr.; and Lewis, Stephen J., to Akzona Incorporated. Glass support coated with synthetic polymer for bioprocess. 4,357,142, Cl. 23-230.00B.

Schanze, Rudolf. Feedstuff or feedstuff additive and process for its production. 4,357,358, Cl. 426-62.000.

Scharren, Gunter: *See*—
Muller-Kuhn, Helmut; Scharren, Gunter; Kohlmeier, Wilfried; Grillo, Michael; and Rost, Jurgen, 4,356,929, Cl. 220-270.000.

Schellenberg, Matthias: *See*—
Chylewski, Christoph; Jan, Gerald; Kurzen, Roland; Meier, Max; and Schellenberg, Matthias, 4,357,280, Cl. 260-465.00R.

Schenck, Hans-Uwe: *See*—
Lehner, August; Gimpel, Juergen; Buethe, Ingolf; Hartmann, Heinrich; and Schenck, Hans-Uwe, 4,357,221, Cl. 204-181.00R.

Scher, Herbert B.: *See*—
Fancher, Llewellyn W.; and Scher, Herbert B., 4,357,351, Cl. 424-326.000.

Scheuneman, James H., to Sperry Corporation. Hidden memory refresh. 4,357,686, Cl. 365-222.000.

Schinke, Friedel, to Sulo Eisenwerk Streuber & Lohmann GmbH & Co. KG. Locking system for a synthetic resin packing container. 4,356,931, Cl. 220-323.000.

Schira, John J.; and Leung, Chun-Keung, to Bendix Corporation, The. Closed loop timing and fuel distribution controls. 4,357,662, Cl. 364-431.080.

Schlegel (UK) Limited: *See*—
Holding, David, 4,356,587, Cl. 15-199.000.

Schlumberger Technology Corporation: *See*—
Hepp, Vincent R., 4,357,660, Cl. 364-422.000.

Schmanski, Donald W.; and Rose, Thomas J. Method and apparatus for making fences. 4,357,001, Cl. 256-51.000.

Schmid, August, to Patentverwertungs-und Finanzierungsgesellschaft SERANIA AG. Support clip for electrical conductors or tubes. 4,356,987, Cl. 248-73.000.

Schmid, Eberhard; and Kaufhold, Wolfgang, to Siemens Aktiengesellschaft. Voltage compensation for an A-C network supplying a rapidly-changing load. 4,357,570, Cl. 323-210.000.

Schmidt, Nicholas F.: *See*—
Shah, Nutan B.; and Schmidt, Nicholas F., 4,357,318, Cl. 424-52.000.

Schmidt, Warren J., to Westinghouse Electric Corp. Ratio ground relays. 4,357,644, Cl. 361-76.000.

Schmit, Paul F., to Minnesota Mining and Manufacturing Company. Heat sealing platen, method of sealing and sealed cup. 4,356,955, Cl. 229-75.000.

Schmitt, Frederick L.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,357,246, Cl. 252-8.600.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,357,253, Cl. 252-174.110.

Schneider, Friedrich C. Picture album. 4,356,652, Cl. 40-530.000.

Schneider, Herman E.; and Stein, Daniel A. Auto racing game wherein a numbered array and player-actuated discs determine race car movement. 4,357,017, Cl. 273-246.000.

Schneider, Palle: *See*—
Branner-Jogensen, Sven; Schneider, Palle; and Eigtved, Peter, 4,357,357, Cl. 426-36.000.

Schneider, Wolfgang: *See*—
Hornung, Hans; and Schneider, Wolfgang, 4,356,745, Cl. 83-341.000.

Schnug, Lieselotte, to EDV-Druck Walter Schnug KG. Multiple sets, particularly endless sets. 4,357,380, Cl. 428-138.000.

Schnurrbusch, Karl: *See*—
Sattlegger, Hans; Schnurrbusch, Karl; Boll, Manfred; and Friemann, Hans, 4,357,438, Cl. 524-490.000.

Schonert, Klaus. Method of fine and very fine comminution of materials having brittle behavior. 4,357,287, Cl. 264-39.000.

Schopf, Hans-Joachim; and Lug, Dietmar, to Daimler-Benz Aktiengesellschaft. Cast crankshafts. 4,356,741, Cl. 74-595.000.

Schor, Joseph M., to Forest Laboratories, Inc. Carrier base material for prolonged release therapeutic compositions. 4,357,469, Cl. 536-91.000.

Schreck, David J., to Union Carbide Corporation. Wet-adhesion aid. 4,357,440, Cl. 524-535.000.

Schreyer, Franz: *See*—
Karl, Rupert; Oexler, Rudolf; Schuller, Edmund; Braun, Erwin; Bock, Erick; and Schreyer, Franz, 4,356,691, Cl. 57-263.000.

Schreyer, Heinz: *See*—
Mankel, Siegfried; Ostertag, Klaus; and Schreyer, Heinz, 4,357,071, Cl. 350-6.800.

Schroder, Martin: *See*—
Heinrich, Wolfgang; Bytzek, Max; Hammer, Klaus-Dieter; and Schroder, Martin, 4,357,371, Cl. 427-238.000.

Schroder, Stephen J.: *See*—
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,357,395, Cl. 428-607.000.

Schroeder, Robert E.: *See*—
Andersen, Brad E.; Hamilton, Billy H.; and Schroeder, Robert E., 4,357,572, Cl. 323-286.000.

Schubert & Salzer: *See*—
Karl, Rupert; Oexler, Rudolf; Schuller, Edmund; Braun, Erwin; Bock, Erick; and Schreyer, Franz, 4,356,691, Cl. 57-263.000.
Karl, Rupert; Mayer, Walter; Schuller, Edmund; and Braun, Erwin, 4,356,692, Cl. 57-263.000.

Schuller, Edmund: *See*—
Karl, Rupert; Oexler, Rudolf; Schuller, Edmund; Braun, Erwin; Bock, Erick; and Schreyer, Franz, 4,356,691, Cl. 57-263.000.
Karl, Rupert; Mayer, Walter; Schuller, Edmund; and Braun, Erwin, 4,356,692, Cl. 57-263.000.

Schulze, Stephen R.: *See*—
Vanderkooi, Nicholas, Jr.; Haylock, John C.; Schulze, Stephen R.; and Tuller, Harold W., 4,357,268, Cl. 524-285.000.

Schumag GmbH: *See*—
Bock, Erwin; and Wetzels, Walter, 4,356,715, Cl. 72-98.000.

Schussler, Mortimer: *See*—
Lambert, John B.; and Schussler, Mortimer, 4,357,382, Cl. 428-212.000.

Schutt, Ernest G., to Warner-Lambert Company. Substrate for immunoassay and means of preparing same. 4,357,311, Cl. 424-12.000.

Schwartz, Arnold; and Delany, Edward B., to Perkin-Elmer Corp., The. Base line correction method and apparatus. 4,357,668, Cl. 364-497.000.

Schwartz, Ulrich: *See*—
Quinkert, Gerhard; Weber, Wolf-Dietrich; and Schwartz, Ulrich, 4,357,278, Cl. 260-397.450.

Schwartzman, Alan: *See*—
Raj, Kuldip; and Schwartzman, Alan, 4,357,021, Cl. 277-1.000.

Science Accessories Corporation: *See*—
Howells, Joseph A.; and Sindeband, Seymour J., 4,357,672, Cl. 364-561.000.

Science Applications, Inc.: *See*—
Koechner, Walter, 4,357,704, Cl. 372-72.000.

Scott, Harry A., to Rockwell International Corporation. Method of making rib structures for an airfoil. 4,356,616, Cl. 29-526.00A.

Scott, Richard L., to Phillips Petroleum Company. Determining ion concentration. 4,357,143, Cl. 23-230.00R.

Sears, Roebuck and Co.: *See*—
Gall, John C., 4,357,042, Cl. 294-31.200.

SECIM: *See*—
Quehen, Andre, 4,356,714, Cl. 72-17.000.

Sedam, Jason K., to Coca Cola Company. CO_2 Supply system for a carbonator device. 4,357,284, Cl. 261-121.00R.

SEDCO, Inc.: *See*—
Hammett, Dillard S., 4,356,789, Cl. 114-365.000.

Seiji, Narazaki: *See*—
Katsushige, Matsuzaki; Seiji, Narazaki; and Masanori, Kawaguchi, 4,357,134, Cl. 431-9.000.

Seki, Shigeo: *See*—
Iwamatsu, Katsuyoshi; Inoue, Shigeharu; Miyauchi, Keinosuke; Kondo, Shinichi; Seki, Shigeo; and Yamada, Yujiro, 4,357,331, Cl. 424-246.000.
Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,357,465, Cl. 536-13.800.

Sekiguchi, Keiji, to Toyama Industry Co., Ltd. Bag. 4,356,853, Cl. 150-1.000.

Seko, Maomi, to Asahi Kasei Kogyo Kabushiki Kaisha. Cation exchange membrane and use thereof in the electrolysis of sodium chloride. 4,357,218, Cl. 204-98.000.

Senkpiel, Werner: *See*—
Vaeth, Guenter; Bachmann, Rudolf; Senkpiel, Werner; Hartmann, Hans-Joerg; Falk, Roland; and Motz, Herbert, 4,357,378, Cl. 428-64.000.

Senyei, Andrew E.; and Widder, Kenneth J., to Northwestern University. Method of incorporating water-soluble heat-sensitive therapeutic agents in albumin microspheres. 4,357,259, Cl. 252-316.000.

Serbin, David J.: *See*—
Antkowiak, Thomas A.; and Serbin, David J., 4,357,458, Cl. 528-167.000.

Sergienko, Vladimir Y.: *See*—
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.

Service Distributors, Inc.: *See*—
Rath, Lee A.; Sidline, George; and Zhabokrug, Ilya, 4,357,532, Cl. 235-483.000.

Sette, Robert A.: *See*—
Kappenhagen, George A.; Martin, Niles J.; Pace, John E.; Sette, Robert A.; Randall, Charles E.; Jackson, Leigh F.; and Bains, Gurdip S., 4,356,895, Cl. 187-17.000.

Seven-Up Company, The: *See*—
Barnes, William M., 4,356,681, Cl. 53-440.000.

Seymour, Samuel L., to PPG Industries, Inc. Minimizing surface distortion while shaping glass sheets. 4,357,156, Cl. 65-104.000.

SGS-ATES Componenti Elettronici S.p.A.: *See*—
Daniele, Vincenzo; Corda, Giuseppe; Magrucci, Aldo; and Torelli, Guido, 4,357,685, Cl. 365-189.000.

Shah, Nutan B.; and Schmidt, Nicholas F., to Richardson-Vicks Inc. Dentifrices with improved soluble fluoride availability. 4,357,318, Cl. 424-52.000.

Shah, Pravinchandra K., to B. F. Goodrich Company, The. Stable latexes of carboxyl containing polymers. 4,357,442, Cl. 524-745.000.

Shapiro, Herbert M., to Bell Telephone Laboratories, Incorporated. Conductorless transfer for magnetic bubble memories. 4,357,682, Cl. 365-16.000.

Sharp, David, to Ford Printing & Packaging Ltd. Pouring spout carton. 4,356,951, Cl. 229-17.00R.

Sharp Kabushiki Kaisha: *See*—
Inohara, Akio; Sawae, Kiyoshi; Kawaguchi, Masashi; and Isaka, Kinichi, 4,357,557, Cl. 313-509.000.
Shimazawa, Yoichi; and Kawamoto, Toshiaki, 4,357,617, Cl. 346-140.00R.

Sheeler, Scott O.; Bush, Howard B.; and Kiproff, Peter N., to Owens-Corning Fiberglas Corporation. Single-collet, dual-package winder with self-threading rear secondary strand guide. 4,357,155, Cl. 65-10.100.

Sheibley, Dean W.; Rieker, Lorra L.; Hsu, Li-Chen; and Manzo, Michelle A., to United States of America, National Aeronautics and Space Administration. Polyvinyl alcohol cross-linked with two aldehydes. 4,357,402, Cl. 429-206.000.

Shell Oil Company: *See*—
Appel, Cornelis; and Kuilman, Bartel, 4,356,865, Cl. 166-153.000.
Berkshire, David C.; Lawson, Jimmie B.; and Richardson, Edwin A., 4,357,248, Cl. 252-8.55B.
Graiff, Leonard B., 4,357,148, Cl. 44-62.000.
Lopez, John A.; and Uzelmeier, Christopher W., 4,357,456, Cl. 528-111.500.
Pegels, Abraham A.; and van Kessel, Matheus M., 4,357,304, Cl. 422-191.000.

Shepherd Products Ltd.: *See*—
McIntosh, Lawrie, 4,356,988, Cl. 248-129.000.

Sherwood Medical Industries Inc.: *See*—
Gindler, E. Melvin; and Daskalakis, Olga, 4,357,144, Cl. 23-230.00B.

Sherwood-Selpac Corporation: *See*—
Trinkwalder, Joseph C., Jr., 4,356,820, Cl. 128-204.260.

Sherwood Tool, Incorporated: *See*—
Johnson, Warren E., 4,357,138, Cl. 493-159.000.

Shida, Akio: *See*—
Arita, Satoshi; Touge, Kiyomi; Shida, Akio; and Yamaura, Sigenobu, 4,357,225, Cl. 204-281.000.

Shigematsu, Kazuo: *See*—
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Shigematsu, Kazuo; Ojima, Masahiro; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,357,616, Cl. 346-135.100.

Shih, Stuart S.: *See*—
Heck, Roland H.; Cleck, Stephen M.; Shih, Stuart S.; and Wilson, Robert C., 4,357,263, Cl. 252-439.000.

Shiiya, Koichi: *See*—
Koshimizu, Naganori; and Shiiya, Koichi, 4,356,694, Cl. 60-562.000.

Shimada, Fumio; and Hiruma, Kinu, to Konishiroku Photo Industry Co., Ltd. Photoconductive plate for printing and a method for the preparation of a printing plate by heating. 4,357,403, Cl. 430-18.000.

Shimada, Kunihiko: *See*—
Tsuchiya, Yukio; and Shimada, Kunihiko, 4,357,498, Cl. 179-115.5DV.

Shimazawa, Yoichi; and Kawamoto, Toshiaki, to Sharp Kabushiki Kaisha. Ink recirculating device of ink jet printer. 4,357,617, Cl. 346-140.00R.

Shimomura, Jun; Ikeda, Hideo; and Iizuka, Yutaka, to Nippon Kogaku K.K. Focus detecting optical device of a single lens reflex camera. 4,357,086, Cl. 354-25.000.

Shimotake, Hiroshi: *See*—
Nelson, Paul A.; and Shimotake, Hiroshi, 4,357,398, Cl. 429-94.000.

Shin-Etsu Polymer Co., Ltd.: *See*—
Sado, Ryoichi; and Okada, Kenichi, 4,357,266, Cl. 252-512.000.

Shinshu Seiki Kabushiki Kaisha: *See*—
Oguchi, Yuhei, 4,357,116, Cl. 400-184.000.

Shirakawa, Takashi; and Izumi, Hiroshi, to Alps Electric Co., Ltd. Method of producing trimmer capacitors. 4,356,607, Cl. 29-25.420.

Shook, William B.: *See*—
Helferich, Richard L.; and Shook, William B., 4,357,165, Cl. 106-38.300.

Shortnacy, Anita T.: *See*—
Montgomery, John A.; and Shortnacy, Anita T., 4,357,324, Cl. 424-180.000.

Shuler, Lucien B.; and Spivey, William J., Jr., to Caterpillar Tractor Co. Control arrangement with snubber means. 4,356,738, Cl. 74-470.000.

Siarto, Andrew V. Machine tool. 4,356,904, Cl. 198-345.000.

Sibley, Howard W.; and Bzdula, Joseph A., to Carrier Corporation. Extraction of oil using amides. 4,357,230, Cl. 208-11.0LE.

Sidline, George: *See*—
Rath, Lee A.; Sidline, George; and Zhabokrug, Ilya, 4,357,532, Cl. 235-483.000.

Siegel, Martin M., to Occidental Oil Shale, Inc. Withdrawal of gases and liquids from an in situ oil shale retort. 4,357,051, Cl. 299-2.000.

Siemens Aktiengesellschaft: *See*—
Baeker, Klaus, 4,357,708, Cl. 378-25.000.
Behn, Reinhard, 4,356,608, Cl. 29-25.420.
Braunweiler, Max, 4,356,733, Cl. 73-863.110.
Fleer, Ernst O.; Gunther, Werner; and Muether, Manfred, 4,357,539, Cl. 378-170.000.
Goehlich, Lothar; and Haug, Jurgen, 4,357,487, Cl. 174-73.00R.
Grabmaier, Christa, 4,357,200, Cl. 156-603.000.
Grabmaier, Christa; and Holzapfel, Heinz, 4,357,201, Cl. 156-603.000.
Hadersbeck, Hans; and Zukier, Hubert, 4,357,647, Cl. 361-400.000.
Rattner, Manfred, 4,357,537, Cl. 378-103.000.
Roesler, Bernward, 4,357,571, Cl. 323-281.000.
Schmid, Eberhard; and Kaufhold, Wolfgang, 4,357,570, Cl. 323-210.000.
Trausch, Guenther; and Houben, Wilfried, 4,357,205, Cl. 156-656.000.
von Tomkewitsch, Romuald, 4,357,593, Cl. 340-23.000.
Werner, Peter, 4,357,508, Cl. 200-148.00H.
Widmann, Dietrich, 4,356,622, Cl. 29-571.000.

Sillard, Gilles: *See*—
Martel, Jacques; and Sillard, Gilles, 4,357,583, Cl. 333-17.00L.

Sills, Peter D., to Minnesota Mining and Manufacturing Company. Covering power in films. 4,357,419, Cl. 430-564.000.

Sim-Chem Limited: *See*—
Bu'Lock, John D., 4,357,424, Cl. 435-162.000.

Simon, Donald R.; and Porrazzo, Salvatore P., to PepsiCo. Inc. Syrup distribution system. 4,356,937, Cl. 222-129.200.

Simpson, Robert D.: *See*—
Robbins, Richard E.; and Simpson, Robert D., 4,357,663, Cl. 364-433.000.

Sims, Anson: *See*—
Knighton, Mark S.; Fuller, Charles H.; Sims, Anson; Howden, Ashley G.; Kingsbury, L. C. James; and Jones, Lawrence T., 4,357,488, Cl. 179-1.0SC.

Sims, Raymond E.: *See*—
Ellis, James B.; Sims, Raymond E.; and Savit, Joseph, 4,356,679, Cl. 53-381.00R.
Ellis, James B.; Sims, Raymond E.; and Lisiecki, Mieczyslaw J., 4,356,683, Cl. 53-492.000.
Ellis, James B.; and Sims, Raymond E., 4,356,684, Cl. 53-492.000.

Sims, Royal W.: *See*—
Fay, Robert W., 4,356,723, Cl. 73-54.000.

Sindeband, Seymour J.: *See*—
Howells, Joseph A.; and Sindeband, Seymour J., 4,357,672, Cl. 364-561.000.

Singer Company, The: *See*—
Glore, Thomas G., 4,356,851, Cl. 144-253.00G.
Rodda, Donald, 4,356,781, Cl. 112-184.000.

Sinnreich, Joel: *See*—
Batzer, Hans; and Sinnreich, Joel, 4,357,453, Cl. 526-271.000.

Skandinavisk Tobakskompagni A/S: *See*—
Kjaer, Ian; and Moller, Hans J., 4,356,747, Cl. 83-451.000.

Skarlos, Leonidas, to Texaco Inc. On-line oil-in-wax monitoring apparatus and method. 4,357,667, Cl. 364-496.000.

SKF Kugellagerfabriken GmbH: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Dobhan, Herbert; and Horling, Peter, 4,357,056, Cl. 308-6.00C.

Skilling, John B.: *See*—
Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., 4,356,775, Cl. 105-218.00A.

Skinner, Frederick A.: *See*—
Sutherland, Clarke R.; and Skinner, Frederick A., 4,356,719, Cl. 72-391.000.

Skomal, Edward N., to United States of America, Air Force. Radar cross section augmentation. 4,357,611, Cl. 343-18.00C.

Sloan, Cephas H.; Wright, Jerry A.; and Morie, Gerald P., to Eastman Kodak Company. Melt blown product. 4,357,379, Cl. 428-113.000.

Smart, Gerald D. Method for installing an elevator system. 4,356,890, Cl. 187-6.000.

Smith, Danny J.: *See*—
Kiefer, Joseph H.; and Smith, Danny J., 4,357,515, Cl. 219-60.200.

Smith, Gary A., to Honeywell, Inc. Dual deadband control system. 4,356,961, Cl. 236-1.0EA.

Smith, Gregory M.: *See*—
Bullard, Edward M.; and Smith, Gregory M., 4,357,191, Cl. 156-244.140.

Smith, Harry B.; Robertson, Kenneth L.; and Smith, Robert T., to Federal Reserve Bank of Richmond. Machine and method for counting and reconciling paper money. 4,357,528, Cl. 235-92.0SB.

Smith, Robert T.: *See*—
Smith, Harry B.; Robertson, Kenneth L.; and Smith, Robert T., 4,357,528, Cl. 235-92.0SB.

Smith, William C., to Innovative Tool Corporation. Hand drive tool. 4,356,852, Cl. 145-61.00L.

Smither, Miles A., to Geosource Inc. Instantaneous floating point amplifier. 4,357,577, Cl. 330-51.000.

Smolanoff, Joel R., to Rohm and Haas Company. Azaspiro compounds. 4,357,471, Cl. 546-16.000.

Smolikowski, Serge: *See*—
Herve, Jean J.; and Smolikowski, Serge, 4,357,350, Cl. 424-304.000.

Snyder, Michael D.; and Soth, Henry J., to Universal Instruments Corporation. Cut and clinch head assembly. 4,356,619, Cl. 29-566.300.

Snyder, Michael D.; and Matson, Crawford A., to Universal Instruments Corporation. Rotary transfer assembly for high speed radial lead component sequencing and inserting machine. 4,356,949, Cl. 227-76.000.

Societe Anonyme Automobiles Citroen: *See*—
Lalanne, Andre P., 4,357,046, Cl. 296-37.160.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Lunder, Tito L.; and Nielsen, Corine M., 4,357,361, Cl. 426-597.000.

Societe des Electrodes et Refractaires Savoie/SERS: *See*—
Aubry, Michel; Bernard, Jean-Claude; and Philipon, Paul, 4,357,210, Cl. 202-85.000.

Societe d'Etudes Contre la Corrosion (SECCO): *See*—
Heuze, Bernard, 4,357,573, Cl. 324-54.000.

Societe Nationale des Poudres et Explosifs: *See*—
Cord, Paul P.; and Guy, Louis R., 4,356,768, Cl. 102-275.900.

Societe Nouvelle de Roulements: *See*—
Sonnerat, Claude, 4,357,058, Cl. 308-233.000.

Sol-Optics, Inc.: *See*—
Solomon, Charles I., 4,357,080, Cl. 351-86.000.

Solar Energy Technology, Inc.: *See—*
Herskovitz, Sheldon B.; Marlin, Jay; and Stiglitz, Martin R., 4,357,136, Cl. 433-224.000.

Solomon, Charles I., to Sol-Optics, Inc. Eyeglass frame having removable lens. 4,357,080, Cl. 351-86.000.

Solomon, Frank, to Diamond Shamrock Corporation. Electrode layer treating process. 4,357,262, Cl. 252-425.300.

Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, to Sapporo Breweries Limited; Etsuo Ito; and Daicel Chemical Industries, Ltd. Polysaccharide RBS substance and antitumor agent containing same. 4,357,323, Cl. 424-180.000.

Sommer Co.: *See—*
Sommer, Gordon M., 4,356,900, Cl. 192-0.02R.

Sommer, Gordon M., to Sommer Co. Drive system. 4,356,900, Cl. 192-0.02R.

Sonnerat, Claude, to Societe Nouvelle de Roulements. Self-centering thrust bearing assembly. 4,357,058, Cl. 308-233.000.

Sonnonstine, Terry J.: *See—*
Leichter, Louis M.; Stofko, John J., Jr.; and Sonnonstine, Terry J., 4,357,405, Cl. 430-58.000.

Sony Corporation: *See—*
Hama, Hideki; and Hishijima, Yoichi, 4,357,639, Cl. 360-85.000.
Odaka, Kentaro, 4,357,630, Cl. 358-154.000.
Utsunomiya, Kimitake; Yamada, Hisafumi; and Kuriki, Choei, 4,357,631, Cl. 358-167.000.

Sota, Kaoru: *See—*
Watanabe, Yoshiaki; Yokoo, Chihiro; Asaka, Toshifumi; Onodera, Akira; Sota, Kaoru; and Sawada, Jiro, 4,357,470, Cl. 544-27.000.

Soth, Henry J.: *See—*
Snyder, Michael D.; and Soth, Henry J., 4,356,619, Cl. 29-566.300.

South African Inventions Development Corporation, The: *See—*
Polson, Alfred, 4,357,272, Cl. 260-112.00R.

Spanoudis, Louis, to Owens-Illinois, Inc. Solar energy collector having an absorber element of coated foil. 4,356,815, Cl. 126-443.000.

Spector, George: *See—*
Drefko, Joseph; and Spector, George, 4,357,711, Cl. 455-89.000.
Kester, Adelbert L.; and Spector, George, 4,356,643, Cl. 36-59.00C.
Strasser, Gene; and Spector, George, 4,356,662, Cl. 46-74.00C.

Spencer, Billie M., to Sperry Corporation. Noncoherent two way ranging apparatus. 4,357,609, Cl. 343-12.00R.

Spencer, Kieran O. Miter box. 4,356,749, Cl. 83-765.000.

Spencer, Richard: *See—*
Chase, David; and Spencer, Richard, 4,357,702, Cl. 371-1.000.

Sperry Corporation: *See—*
Kingston, Samuel C.; and Ehresman, Virgil A., 4,357,610, Cl. 343-12.00A.
Scheuneman, James H., 4,357,686, Cl. 365-222.000.
Spencer, Billie M., 4,357,609, Cl. 343-12.00R.

Spies, Henry J. Dispenser assembly. 4,356,848, Cl. 141-349.000.

Spisak, Edward G. Wheel trim assembly. 4,357,053, Cl. 301-37.00R.

Spitzer, Wayne A.; and Goodson, Theodore, Jr., to Eli Lilly and Company. Novel oxazolinoazetidinones and process therefor. 4,357,275, Cl. 260-245.400.

Spivey, William J., Jr.: *See—*
Shuler, Lucien B.; and Spivey, William J., Jr., 4,356,738, Cl. 74-470.000.

Sprecker, Mark A., to International Flavors & Fragrances Inc. Alkenyl phenethylethers and uses thereof in combatting tobacco beetles. 4,357,319, Cl. 424-84.000.

Sprott, Charles N.: *See—*
Greek, John C., Jr.; and Sprott, Charles N., 4,357,680, Cl. 364-900.000.

Staalkat B.V.: *See—*
van der Schoot, Jelle, 4,356,920, Cl. 209-513.000.

Staar S.A.: *See—*
d'Alayer de Costemore d'Arc, Stephane M., 4,357,643, Cl. 360-137.000.

Stafford, William. Decorative article containing fowl. 4,356,928, Cl. 220-263.000.

Stalcup, Robert K.; and Prewo, Karl M., to United Technologies Corporation. Method of making a graphite-glass composite laser mirror. 4,357,286, Cl. 264-1.200.

Stamboulian, Nazareth, to American Safety Equipment Corporation. Flexible belt positioning arm. 4,357,035, Cl. 280-804.000.

Standard Oil Company (Indiana): *See—*
West, C. Thomas; and Basalay, Robert J., 4,357,149, Cl. 44-68.000.

Standard Telephones and Cables Limited: *See—*
Sweet, Anthony W.; and Dyer, Michael P., 4,357,495, Cl. 179-77.000.

Stanley Electric Co., Ltd.: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Umemoto, Shuichi; and Arai, Naoki, 4,357,654, Cl. 363-21.000.

Stanley, Glenn; and Stanley, Michael. Window overlay for thermal insulation. 4,357,187, Cl. 156-107.000.

Stanley, Michael: *See—*
Stanley, Glenn; and Stanley, Michael, 4,357,187, Cl. 156-107.000.

Stauffer Chemical Company: *See—*
Buffington, Chester G.; Fang, Herbert H.; Friedfeld, Barry A.; Kaniecki, Thaddeus J.; Kennedy, John W.; Liu, Chong-tan; Sternberg, Morton; Feng, Henry H.; Chen, Paul Y.; Mukaddam, Waheed; and Narasimhan, Pattamadai E., 4,357,175, Cl. 134-10.000.
Chin, Hsiao-Ling M.; and Pallos, Ferenc M., 4,357,346, Cl. 424-298.000.
Fancher, Llewellyn W.; and Scher, Herbert B., 4,357,351, Cl. 424-326.000.
Wong, Rayman Y., 4,357,336, Cl. 424-263.000.

Steddom, William: *See—*
Woo, Way D.; and Steddom, William, 4,357,560, Cl. 318-7.000.

Stedef S.A.: *See—*
Harmsen, John L., 4,356,968, Cl. 238-1.000.

Steele, Richard J. Pipe cutting machine. 4,357,002, Cl. 266-56.000.

Steenberg, Christen K. Structural joint. 4,356,888, Cl. 182-194.000.

Steer, David C.: *See—*
Cox, Roger B.; and Steer, David C., 4,357,423, Cl. 435-101.000.

Stefanski, Andrew; and Dorny, C. Nelson, to Hewlett-Packard Company. Apparatus for performing measurements and error analysis of the measurements. 4,357,673, Cl. 364-582.000.

Steffen, Ulrich; Alberts, Heinrich; and Morbitzer, Leo, to Bayer Aktiengesellschaft. Process for the production of cross-linked graft copolymers. 4,357,445, Cl. 525-244.000.

Stein, Daniel A.: *See—*
Schneider, Herman E.; and Stein, Daniel A., 4,357,017, Cl. 273-246.000.

Stein Industrie: *See—*
Loiez, Jean-Louis; and Fournier, Jean, 4,356,795, Cl. 122-511.000.

Stekl, Robert M.: *See—*
Anderson, Thomas W.; Jenness, Robert V.; Milczarek, Richard J.; Schaefer, Edwin M., III; and Stekl, Robert M., 4,357,493, Cl. 179-6.040.

Stemmler, Ingo; Muller, Hanns-Peter; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the preparation of liquid mixtures of compounds having isocyanate groups. 4,357,255, Cl. 252-182.000.

Stephens, Geoffrey B.: *See—*
Bergeron, David L.; Fleming, Daniel J.; and Stephens, Geoffrey B., 4,357,178, Cl. 148-1.500.

Stephenson, Thomas G. Pool sweep brush. 4,356,582, Cl. 15-1.700.

Stern, Howard K.; Ross, Joseph A.; and Di Matteo, Paul, to Robotic Vision Systems, Inc. Method for reproducton of object surfaces. 4,357,108, Cl. 356-376.000.

Stern, Melvin; and True, Daniel G., to United States of America, Navy. Deepwater propellant embedded anchor having emergency release mechanism. 4,356,788, Cl. 114-295.000.

Sternberg, Morton: *See—*
Buffington, Chester G.; Fang, Herbert H.; Friedfeld, Barry A.; Kaniecki, Thaddeus J.; Kennedy, John W.; Liu, Chong-tan; Sternberg, Morton; Feng, Henry H.; Chen, Paul Y.; Mukaddam, Waheed; and Narasimhan, Pattamadai E., 4,357,175, Cl. 134-10.000.

Sternberg, Robert L., to United States of America, Navy. Ellipticized rubber acoustical lens providing balanced astigmatism. 4,356,883, Cl. 181-176.000.

Stewart, David G.: *See—*
Barlow, Michael T.; and Stewart, David G., 4,357,480, Cl. 568-902.000.

Stewart-Warner Corporation: *See—*
Mayer, William R., 4,357,651, Cl. 362-275.000.

Stiglitz, Martin R.: *See—*
Herskovitz, Sheldon B.; Marlin, Jay; and Stiglitz, Martin R., 4,357,136, Cl. 433-224.000.

Sting, Donald W.: *See—*
Fouss, James L.; Parker, John J.; and Sting, Donald W., 4,357,190, Cl. 156-244.130.

Stofko, John, to Stofko, John; and Jansky, John. Steam bonding of solid lignocellulosic material. 4,357,194, Cl. 156-308.600.

Stofko, John J., Jr.: *See—*
Leichter, Louis M.; Stofko, John J., Jr.; and Sonnonstine, Terry J., 4,357,405, Cl. 430-58.000.

Strasser, Gene; and Spector, George. Model rocketry split nose ejection. 4,356,662, Cl. 46-74.00C.

Strauss, Kuno; and Nasner, Alice, to Lucas Meyer GmbH & Co. Process for the production of an emulsifier based on lecithin and product thereof. 4,357,353, Cl. 424-365.000.

Strick Corporation: *See—*
Katz, Sol, 4,357,047, Cl. 296-181.000.

Strouk, Gilbert, to FATA S.A. Device for automatically selecting the speed of a self-propelling moving body. 4,357,562, Cl. 318-135.000.

Subtex, Inc.: *See—*
George, Stephen; and George, Thomas H., 4,357,387, Cl. 428-246.000.

Sudakov, Jury I.: *See—*
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Obidin, Valery Y.; Pogorelova, Iraida S.; Ogy, Grigory E.; Vainshtein, Leonid A.; and Pann, Lazar A., 4,356,759, Cl. 91-31.000.

Suga, Kyusaku: *See—*
Takehara, Hideaki; Wada, Yoshiyo; Goto, Kunio; Suga, Kyusaku; and Watanabe, Hitoshi, 4,357,699, Cl. 369-173.000.

Suga, Yoshinori: *See—*
Kakogawa, Genjiro; Hasuo, Masayoshi; Suga, Yoshinori; Kitada, Hisashi; and Uehara, Yumito, 4,357,452, Cl. 526-139.000.

Sugawa, Kazuo; and Amemiya, Norio, to Olympus Optical Company Ltd. Electrophotographic copying machine. 4,357,095, Cl. 355-3.00R.

Sugita, Naoki: *See—*
Masuda, Senichi; and Sugita, Naoki, 4,357,150, Cl. 55-6.000.

Sullivan, Jeremiah S. Armored skin diving suit. 4,356,569, Cl. 2-2.500.

Sullivan, Robert P.: *See—*
Anderson, Paul C.; and Sullivan, Robert P., 4,356,847, Cl. 141-311.00R.

Sulo Eisenwerk Streuber & Lohmann GmbH & Co. KG: *See—*
Schinke, Friedel, 4,356,931, Cl. 220-323.000.

Sumi, Yasuo; Watanabe, Tsuguo; and Yamane, Ken, to Nissan Motor Co., Ltd. By-pass valve apparatus of an exhaust turbocharger for an internal combustion engine. 4,356,695, Cl. 60-602.000.

Sumida, Yasuji: *See*—
Sasaki, Koichi; Sumida, Yasuji; and Ishida, Hiroshi, 4,357,101, Cl. 355-75.000.

Sumitomo Chemical Company, Limited: *See*—
Kasamatsu, Kiyoshi; Hirano, Masachika; and Okuno, Takeshi, 4,357,348, Cl. 424-300.000.

Sumitomo Kinzoku Kogyo Kabushiki Kaisha: *See*—
Nishimoto, Koji; Higuchi, Kenji; Oki, Toshiyuki; and Machida, Nobuo, 4,357,512, Cl. 219-8.500.

Sumitomo Light Metal Industries, Ltd.: *See*—
Baba, Yoshio; Tanabe, Zenichi; Fukui, Toshiyasu; and Ikeda, Hiroshi, 4,357,397, Cl. 428-654.000.

Sumitomo Metal Mining Company Limited: *See*—
Takahashi, Nobuo; and Toda, Hirao, 4,357,261, Cl. 252-385.000.

Sunrise Systems, Inc.: *See*—
Miller, Paul A., 4,357,671, Cl. 364-518.000.

Supper, Ottmar: *See*—
Burghoff, Karl; Supper, Ottmar; and Trube, Hans, 4,356,737, Cl. 74-501.00R.

Supra Aktiebolag: *See*—
Knudsen, Ib H.; Lindstrom, Bror A. O.; and Carlsson, Nils-Eric, 4,357,241, Cl. 210-708.000.

Sutherland, Clarke R.; and Skinner, Frederick A., to USM Corporation. Mandrel jaw and method of manufacture. 4,356,719, Cl. 72-391.000.

Sutoh, Shinji; Harada, Takeshi; and Kaneko, Shinichi, to Diesel Kiki Company, Ltd. Vehicle temperature control apparatus. 4,356,705, Cl. 62-229.000.

Suwa, Hiroyuki: *See*—
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,356,717, Cl. 72-342.000.

Suzuki, Hideo; and Kaneko, Makoto, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic accompaniment system for electronic musical instrument. 4,356,752, Cl. 84-1.030.

Suzuki, Kazuo: *See*—
Ariga, Shoji; and Suzuki, Kazuo, 4,356,864, Cl. 165-80.00B.

Suzuki, Keiji: *See*—
Watanabe, Masaki; Wakatsuki, Goroei; and Suzuki, Keiji, 4,356,876, Cl. 180-210.000.

Svenjak, Dario: *See*—
Cassaday, Michael M.; Diebler, Herman G.; Svenjak, Dario; and Uffenheimer, Kenneth F., 4,357,301, Cl. 422-64.000.

Swallow, Douglas L., to Imperial Chemical Industries Limited. Antiviral tetracyclononane derivatives, processes for their manufacture and pharmaceutical compositions containing them. 4,357,352, Cl. 424-330.000.

Swartz, Delbert D.: *See*—
McRoskey, John W.; and Swartz, Delbert D., 4,356,941, Cl. 222-632.000.

Sweet, Anthony W.; and Dyer, Michael P., to Standard Telephones and Cables Limited. Telephone line feed. 4,357,495, Cl. 179-77.000.

Swieskowski, Henry P., to United States of America, Army. Firearm magazine. 4,356,653, Cl. 42-50.000.

Swiss Aluminium Ltd.: *See*—
Alder, Hanspeter, 4,357,226, Cl. 204-286.000.
Mittelmann, Gerhard, 4,357,059, Cl. 312-321.000.
Zehnder, Jurg; and Grischott, Jann, 4,357,048, Cl. 296-183.000.

Sybron Corporation: *See*—
Mehra, Ravinder C.; Hahn, Heinz W.; and Aggarwal, Raj K., 4,357,240, Cl. 210-455.000.

Syntex (U.S.A.) Inc.: *See*—
Rooks, Wendell H., II; Ackerman, Neil R.; and Tomolonis, Albert J., 4,357,322, Cl. 424-177.000.

Szejtli, Jozsef; Zsadon, Bela; Fenyvesi, Eva; Horvath, nee Otta; Klara; and Tudos, Ferenc, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Sorbents of cellulose basis capable of forming inclusion complexes and a process for the preparation thereof. 4,357,468, Cl. 536-56.000.

Tabak, Samuel A.: *See*—
Holland, Robert E.; and Tabak, Samuel A., 4,357,232, Cl. 208-87.000.

Tachikawa Spring Company Limited: *See*—
Sakurada, Kenichi; and Nishino, Ryuichi, 4,356,990, Cl. 248-396.000.

Tack & Gabel GmbH & Co. KG: *See*—
Tolle, Karl-Heinz, 4,357,039, Cl. 292-341.120.

Taguchi, Katsumi; Nishioka, Yuji; and Kuroda, Muneo, to Minolta Camera Kabushiki Kaisha. Optical imaging system. 4,357,099, Cl. 355-46.000.

Taguchi, Seiichi: *See*—
Osawa, Sadao; Taguchi, Seiichi; and Honjo, Satoru, 4,357,404, Cl. 430-49.000.

Taisho Pharmaceutical Co., Ltd.: *See*—
Watanabe, Yoshiaki; Yokoo, Chihiro; Asaka, Toshifumi; Onodera, Akira; Sota, Kaoru; and Sawada, Jiro, 4,357,470, Cl. 544-27.000.

Tajima Roofing Co., Ltd.: *See*—
Yamamoto, Kaname, 4,357,377, Cl. 428-40.000.

Takacs, Istvan; Felmeri, Jozsef; Kerey, Gyorgy; Rudolf, Peter; Banos, Zoltan; Vereczkey, Endre; and Bosits, Gyula, to Richter Gedeon Vegyeszeti Gyar Rt. Crystallization apparatus. 4,357,306, Cl. 422-254.000.

Takada, Masaki: *See*—
Yoshino, Eiichi; Ishikawa, Hidehiko; Inoue, Fumitaka; Takada, Masaki; and Misaki, Hideo, 4,357,425, Cl. 435-191.000.

Takahashi, Nobuo; and Toda, Hirao, to Sumitomo Metal Mining Company Limited. Method for manufacture of a composite copper-arsenic compound mixture. 4,357,261, Cl. 252-385.000.

Takahashi, Toshiyuki: *See*—
Kubota, Hitoshi; and Takahashi, Toshiyuki, 4,356,729, Cl. 73-308.000.

Takahashi, Yukiharu, to Tokyo Shibaura Electric Co., Ltd. Analog-digital converter. 4,357,599, Cl. 340-347.0AD.

Takamisawa Cybernetics Co., Ltd.: *See*—
Takamisawa, Kaihei; and Yui, Masatoshi, 4,357,574, Cl. 324-73.00R.

Takamisawa, Kaihei; and Yui, Masatoshi, to Takamisawa Cybernetics Co., Ltd. Loading apparatus for testing a power supply. 4,357,574, Cl. 324-73.00R.

Takaoka, Takashi; Mochizuki, Masahiko; Miura, Tadao; and Yamashita, Mitsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of making an optical memory disk and a product thereby. 4,357,366, Cl. 427-54.100.

Takasa, Kenji; Hirakawa, Keizo; Nishimaru, Hiroji; and Honda, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for separation of indole using X and Y type zeolites. 4,357,276, Cl. 260-319.100.

Takehara, Hideaki; Wada, Yoshiyo; Goto, Kunio; Suga, Kyusaku; and Watanabe, Hitoshi, to Adamant Kogyo Co., Ltd.; and Victor Company of Japan, Limited. Capacitance detection type stylus with diamond body and electrode having the same wear resistance properties. 4,357,699, Cl. 369-173.000.

Taketomi, Chiaki; Miura, Tadao; Akiba, Keiji; and Hirose, Koji, to Clarion Co., Ltd. Magnetic tape device. 4,357,636, Cl. 360-62.000.

Takeuchi, Koji: *See*—
Miyoshi, Takeshi; Takeuchi, Koji; Nukui, Tatsuo; and Oshida, Hidetaka, 4,357,434, Cl. 524-178.000.

Takeuchi, Minami; and Kuriki, Minoru, to Tokyo Shibaura Electric Co., Ltd. Reverse conducting thyristor with specific resistor structures between main cathode and amplifying, reverse conducting portions. 4,357,621, Cl. 357-39.000.

Tamai, Masayoshi, to Fuji Xerox Co., Ltd. Ink particle jetting device for multi-nozzle ink jet printer. 4,357,614, Cl. 346-75.000.

Tamura, Koichi; Kajiyama, Ryuichi; and Iwata, Shigemi, to Mitsubishi Denki Kabushiki Kaisha. Elevator terminal deceleration system. 4,356,896, Cl. 187-29.00R.

Tanabe, Zenichi: *See*—
Baba, Yoshio; Tanabe, Zenichi; Fukui, Toshiyasu; and Ikeda, Hiroshi, 4,357,397, Cl. 428-654.000.

Tanaka, Hiroshi; and Sakata, Fusao, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for etching metallic sheet. 4,357,196, Cl. 156-345.000.

Taniguchi, Yoshio: *See*—
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Shigematsu, Kazuo; Ojima, Masahiro; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,357,616, Cl. 346-135.100.

Taren, Jack; and Klein, J. Herbert. Photography system with large length to width picture format ratio. 4,357,102, Cl. 355-77.000.

Taschereau, Andre: *See*—
Waters, Michael J.; Taschereau, Andre; and Fortin, Jacques, 4,356,784, Cl. 114-248.000.

Tasma, Gerald W. Flying insect killer and light fixture incorporating same. 4,356,656, Cl. 43-113.000.

Tawil, Abraham I., to H.I.T. Industries, Ltd. Attache case including expansion gusset. 4,356,899, Cl. 190-44.000.

Tayama, Isamu: *See*—
Kawata, Yukio; Obata, Tetsuo; Keino, Chouji; and Tayama, Isamu, 4,357,513, Cl. 219-10.55B.

Taylor, Gene E.; and McCulloch, Donald S. Multipositional medical bed. 4,356,577, Cl. 5-62.000.

Taylor, John C. Electric water-boiling container having switch-on dry and stream sensitive thermally responsive control units. 4,357,520, Cl. 219-330.000.

TDK Electronics Co., Ltd.: *See*—
Hosaka, Akihiko; and Okuyama, Kiyotaka, 4,357,391, Cl. 428-413.000.

Teche, Andre: *See*—
Martel, Jacques; Tessier, Jean; Teche, Andre; and Demoute, Jean-Pierre, 4,357,335, Cl. 424-263.000.

Technicon Instruments Corp.: *See*—
Cassaday, Michael M.; Diebler, Herman G.; Svenjak, Dario; and Uffenheimer, Kenneth F., 4,357,301, Cl. 422-64.000.

Teeter, Terry E., to Eaton Corporation. Add-on forced lubrication system. 4,356,889, Cl. 184-6.120.

Tegal Corporation: *See*—
Gorin, Georges J., 4,357,195, Cl. 156-345.000.

Teijin Limited: *See*—
Kuroda, Toshimasa; Ishii, Seiji; Kumakawa, Shiro; and Iohara, Koh-ichi, 4,357,385, Cl. 428-229.000.
Masuho, Yasuhiko; Umemoto, Naoji; Hara, Takeshi; and Hirai, Hidematsu, 4,357,273, Cl. 260-112.50R.
Ozaki, Kiyotaka; and Matsui, Michikage, 4,357,390, Cl. 428-398.000.

Teiling, Torbern, to Aktiebolaget Bofors. Aiming instrument. 4,356,758, Cl. 89-41.00E.

Telefonaktiebolaget L M Ericsson: *See*—
Avsan, Oleg; and Isaksson, Nils K., 4,357,679, Cl. 364-900.000.

Tellabs, Inc.: *See*—
Chambers, Charles W., Jr., 4,357,494, Cl. 179-16.00F.

Telle, Jerome R. Multipurpose exercising machine. 4,357,010, Cl. 272-117.000.

Tempmaster Corporation: *See*—
Edwards, Douglas F.; and Dean, Raymond H., 4,356,963, Cl. 236-49.000.
Tenner, Richard B.; and Bracey, Robert G., to Eaton Corporation. Modular push-button switch with lighted push-button element. 4,357,511, Cl. 200-314.000.
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Shigematsu, Kazuo; Ojima, Masahiro; Miyamura, Yoshinori; and Yonezawa, Seiji, to Hitachi, Ltd. Recording medium. 4,357,616, Cl. 346-135.100.
Terlecky, Boris S.: *See*—
Brodeur, Rene H.; and Terlecky, Boris S., 4,356,776, Cl. 105-406.00R.
Terry, Linda T. Kneeling appliance for use with bathtubs. 4,356,575, Cl. 4-559.000.
Terzian, Rouben T., to Marvin Glass & Associates. Crying doll. 4,356,663, Cl. 46-118.000.
Tessier, Jean: *See*—
Martel, Jacques; Tessier, Jean; Teche, Andre; and Demoute, Jean-Pierre, 4,357,335, Cl. 424-263.000.
Texaco Inc.: *See*—
Alverson, Frederick C.; MacMurtrie, Edward D.; and Odell, Norman R., 4,357,669, Cl. 364-500.000.
Estes, John H.; and Buinicky, Ernest P., 4,357,231, Cl. 208-11.00R.
Knifton, John F., 4,357,477, Cl. 568-678.000.
Skarlos, Leonidas, 4,357,667, Cl. 364-496.000.
Texas Instruments Incorporated: *See*—
Henderson, Alva E.; and Frantz, Gene A., 4,357,489, Cl. 179-1.0SM.
Hunter, William R., 4,356,623, Cl. 29-571.000.
Jenne, Richard, 4,357,525, Cl. 219-511.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Self-propelled track working machine. 4,356,771, Cl. 104-7.00B.
Thiele, Wilfried: *See*—
Trekel, Rainer; Lorenzen, Uwe; Rehme, Wolfgang; Durr, Rolf; Litschko, Hans G.; and Thiele, Wilfried, 4,356,654, Cl. 43-9.000.
Tholen, Paul, to Klockner-Humboldt-Deutz AG. Cooling system for hydronamic retarder of internal combustion engine. 4,356,796, Cl. 123-41.310.
Thomas, William R., to Baxter Travenol Laboratories, Inc. Method and composition for treating clotting factor inhibitors. 4,357,321, Cl. 424-101.000.
Thompson, Charles E., to Huyck Corporation. Papermaker's forming fabric. 4,356,844, Cl. 139-383.00A.
Thompson, Forrest L.: *See*—
Uren, Delbert L.; and Thompson, Forrest L., 4,357,575, Cl. 324-158.00F.
Thompson, William E.: *See*—
Perrella, Guido; and Thompson, William E., 4,356,858, Cl. 164-154.000.
Thomson-Brandt: *See*—
Romeas, Rene, 4,357,626, Cl. 358-335.000.
Thomson-CSF: *See*—
Martel, Jacques; and Sillard, Gilles, 4,357,583, Cl. 333-17.00L.
Salvat, Francois; Bouko, Jean; and Coquio, Claude, 4,357,612, Cl. 343-786.000.
Thornton, James M., to Dyson Refractories Limited. Holloware for uphill teeming. 4,356,994, Cl. 249-109.000.
Thorogood, Peter B., to Burroughs Wellcome Co. Imidazole derivatives and angina pectoris. 4,357,340, Cl. 424-273.00R.
Tilton, Charles W. Saw guide. 4,356,748, Cl. 83-745.000.
Timex Corporation: *See*—
Plancon, Michel; Migeon, Jean-Pierre; and Grand Chavin, Paul, 4,357,693, Cl. 368-187.000.
Timmler, Helmut: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,357,338, Cl. 424-269.000.
Tisbo, Cosmo N.; and Tisbo, Thomas A., to Custom Plastics, Inc. Molded plastic fence section. 4,357,000, Cl. 256-26.000.
Tisbo, Thomas A.: *See*—
Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,357,000, Cl. 256-26.000.
Toda, Hirao: *See*—
Takahashi, Nobuo; and Toda, Hirao, 4,357,261, Cl. 252-385.000.
Todd, Ronald C.: *See*—
Deming, Andrew F.; and Todd, Ronald C., 4,357,564, Cl. 318-280.000.
Togstad, Frank A. Extendable auger. 4,356,910, Cl. 198-660.000.
Tohoku Ricoh Co., Ltd.: *See*—
Ikenoue, Tsuneo; Liu, Shin-yng; Umemoto, Shuichi; and Arai, Naoki, 4,357,654, Cl. 363-21.000.
Tokai Electric Wire Company Limited: *See*—
Fukushima, Kazunobu; and Motokawa, Masatomo, 4,357,070, Cl. 339-278.00T.
Tokico Ltd.: *See*—
Koshimizu, Naganori; and Shiiya, Koichi, 4,356,694, Cl. 60-562.000.
Tokura, Norihito; Kawai, Hisasi; and Morino, Seiji, to Nippon Soken, Inc. Ignition device for an internal combustion engine. 4,356,807, Cl. 123-606.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
Karasawa, Yukinori, 4,357,079, Cl. 351-7.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Kato, Shuichi; Kusakabe, Hiromi; Yamaguchi, Hiroyasu; and Yoshida, Yoshihiro, 4,357,579, Cl. 330-297.000.
Kojima, Tadashi, 4,357,527, Cl. 235-92.0DM.
Matsushima, Tetsuo; Kondow, Ryotaro; and Matsuzawa, Kunio, 4,357,666, Cl. 364-492.000.
Okazaki, Shizuo, 4,356,711, Cl. 68-23.500.
Takaoka, Takashi; Mochizuki, Masahiko; Miura, Tadao; and Yamashita, Mitsuo, 4,357,366, Cl. 427-54.100.
Tanaka, Hiroshi; and Sakata, Fusao, 4,357,196, Cl. 156-345.000.
Yoshimaru, Tomohisa; and Iida, Kazuhiko, 4,357,638, Cl. 360-72.200.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Takahashi, Yukiharu, 4,357,599, Cl. 340-347.0AD.
Takeuchi, Minami; and Kuriki, Minoru, 4,357,621, Cl. 357-39.000.
Tolle, Karl-Heinz, to Tack & Gabel GmbH & Co. KG. Lock bolt for motor-vehicle door latch. 4,357,039, Cl. 292-341.120.
Tomalia, Donald A.; and Adaway, Timothy J., to Dow Chemical Company, The. Removal of 2-isopropenyl-2-oxazoline monomer. 4,357,464, Cl. 528-481.000.
Tomioka, Hirotaka; and Yamagata, Shyuji, to Nissan Motor Co., Ltd. Vehicle bumper mounting structure. 4,357,040, Cl. 293-102.000.
Tomita, Tamaki; Munekata, Kenichi; Ohkoshi, Fumihiko; and Hasegawa, Toshifumi, to Toyoda Koki Kabushiki Kaisha. Machine tool with automatic tool change. 4,356,621, Cl. 29-568.000.
Tomolonis, Albert J.: *See*—
Rooks, Wendell H., II; Ackerman, Neil R.; and Tomolonis, Albert J., 4,357,322, Cl. 424-177.000.
Toray Industries, Inc.: *See*—
Minorikawa, Koichi; and Kitazawa, Shinichi, 4,356,690, Cl. 57-210.000.
Torelli, Guido: *See*—
Daniele, Vincenzo; Corda, Giuseppe; Magrucci, Aldo; and Torelli, Guido, 4,357,685, Cl. 365-189.000.
Torrington, Leslie A., to RCA Corporation. Video disc player having caddy-actuated record receiving pads. 4,357,698, Cl. 369-77.000.
Touge, Kiyomi: *See*—
Arita, Satoshi; Touge, Kiyomi; Shida, Akio; and Yamaura, Sigenobu, 4,357,225, Cl. 204-281.000.
Towmotor Corporation: *See*—
Johannson, Richard J., 4,356,893, Cl. 187-9.00E.
Towsend, Marvin S. Combined brush and cutter attachment for a shovel blade. 4,357,043, Cl. 294-59.000.
Toyama Industry Co., Ltd.: *See*—
Sekiguchi, Keiji, 4,356,853, Cl. 150-1.000.
Toyo Jozo Company, Ltd.: *See*—
Yoshino, Eiichi; Ishikawa, Hidehiko; Inoue, Fumitaka; Takada, Masaki; and Misaki, Hideo, 4,357,425, Cl. 435-191.000.
Toyo Kogyo Co., Ltd.: *See*—
Fujikawa, Kozo, 4,356,871, Cl. 173-8.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Tomita, Tamaki; Munekata, Kenichi; Ohkoshi, Fumihiko; and Hasegawa, Toshifumi, 4,356,621, Cl. 29-568.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Fukushima, Kazunobu; and Motokawa, Masatomo, 4,357,070, Cl. 339-278.00T.
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,356,742, Cl. 74-869.000.
Matsushima, Katsuaki; and Sakai, Masayuki, 4,356,965, Cl. 237-12.30B.
Miyagi, Hideo, 4,356,803, Cl. 123-492.000.
Traffic Safety Devices Company: *See*—
Ehrlich, Paul; and Wilson, Michael, 4,357,594, Cl. 340-72.000.
TransFRESH Corporation: *See*—
Kuttel, Brian W., 4,356,702, Cl. 62-62.000.
Trausch, Guenther; and Houben, Wilfried, to Siemens Aktiengesellschaft. Method for etched and/or galvanic production of ring zones in small diameter holes. 4,357,205, Cl. 156-656.000.
Trekel, Rainer; Lorenzen, Uwe; Rehme, Wolfgang; Durr, Rolf; Litschko, Hans G.; and Thiele, Wilfried, to VEB Fischfang Rostock. Tandem dragnets. 4,356,654, Cl. 43-9.000.
Tricentrol Benelux B.V.: *See*—
Bouman, Johannes; and van der Linden, Peter J. M., 4,356,794, Cl. 122-158.000.
Trinkwalder, Joseph C., Jr., to Sherwood-Selpac Corporation. Heat reclaimer for demand regulator. 4,356,820, Cl. 128-204.260.
Trio Engineering Ltd. A/S: *See*—
Gundersen, George; Oien, Ewald; Eide, Ragnar; Wersland, Palmer; Borgersen, Kristian; Kloster, Paul, deceased; and Johnsen, Ketil, executor, 4,356,596, Cl. 17-58.000.
Troxler, Eduard: *See*—
Reinchr, Dieter; Hugelin, Bernard; and Troxler, Eduard, 4,357,476, Cl. 564-509.000.
Trube, Hans: *See*—
Burghoff, Karl; Supper, Ottmar; and Trube, Hans, 4,356,737, Cl. 74-501.00R.
True, Daniel G.: *See*—
Stern, Melvin; and True, Daniel G., 4,356,788, Cl. 114-295.000.
Trujillo, Jose A., to Riguez Associates. Uniform asphalt pavement and production method therefore. 4,357,169, Cl. 106-281.00R.
Tschirren, Jean D.; Widmer, Gilbert C.; Pellaux, Jean-Paul; Coche, Andre; and Samsel, Marcel R. Process and device for the optical measurement of temperature and process for the production of a suitable probe. 4,357,106, Cl. 356-44.000.
Tsubaki, Kazumi; Morinaga, Hiroshi; Matsuo, Yoshiho; and Iwabuchi, Takeshi, to Nissan Chemical Industries Ltd. Two step process for polymerizing ethylene. 4,357,448, Cl. 526-65.000.
Tsuchiya, Tsutomu: *See*—
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; and Jikihara, Tomo, 4,357,466, Cl. 536-13.800.

Tsuchiya, Yukio; and Shimada, Kunihiko, to Pioneer Electronic Corporation. Coaxial type multi-way planar diaphragm loudspeaker system. 4,357,498, Cl. 179-115.5DV.
Tsuda, Masatoshi; Kobayashi, Takeshi; and Kaitani, Katsumi, to Katuragi Sangyo Co., Ltd. Sintered porous metal plate and its production. 4,357,393, Cl. 428-547.000.
Tsuji, Kunio; Tsuji, Toshiaki; Hayashi, Otugu; and Hayashi, Tsutomu, to Sakata Shokai, Ltd. Ink composition for waterless lithography and methods of printing therefrom. 4,357,164, Cl. 106-29.000.
Tsuji, Toshiaki: *See*—
Tsuji, Kunio; Tsuji, Toshiaki; Hayashi, Otugu; and Hayashi, Tsutomu, 4,357,164, Cl. 106-29.000.
Tucker, Hugh N.: *See*—
Madsen, David C.; and Tucker, Hugh N., 4,357,343, Cl. 424-274.000.
Tudos, Ferenc: *See*—
Szejtli, Jozsef; Zsadon, Bela; Fenyvesi, Eva; Horvath, nee Otta; Klara; and Tudos, Ferenc, 4,357,468, Cl. 536-56.000.
Tuggle, Gordon P. Hydrofoil boat. 4,356,786, Cl. 114-280.000.
Tuller, Harold W.: *See*—
Vanderkooi, Nicholas, Jr.; Haylock, John C.; Schulze, Stephen R.; and Tuller, Harold W., 4,357,268, Cl. 524-285.000.
Turnbull, William S.; and Pugh, Gary W., to Kontak Manufacturing Company Limited. Hydraulic control valve for selectively supplying fluid to hydraulic services. 4,356,835, Cl. 137-117.000.
Tyree, Lewis, Jr.; Missig, James R.; and Rhoades, George D., to Liquid Carbonic Corporation, by said James R. Missig and George D. Rhoades. Cryogenic cabinet freezer. 4,356,707, Cl. 62-381.000.
Uchida, Kiichi: *See*—
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,357,323, Cl. 424-180.000.
Uchiyama, Shintaro, to Fuji Jukogyo Kabushiki Kaisha. Manipulation device for a transmission apparatus. 4,356,879, Cl. 180-247.000.
Uehara, Yumito: *See*—
Kakogawa, Genjiro; Hasuo, Masayoshi; Suga, Yoshinori; Kitada, Hisashi; and Uehara, Yumito, 4,357,452, Cl. 526-139.000.
Uemura, Masahiro; Harada, Chikao; Sakurado, Kenichi; and Kakamu, Tsunehito, to Nippon Collin Co., Ltd. Method of arrhythmia detection with detecting mechanism. 4,356,827, Cl. 128-680.000.
Ueyama, Yoshinari; Mori, Kikuo; and Matsushita, Hideo, to Pegasus Sewing Machine Mfg. Co., Ltd. Thread chain sewing method and device for use in the two-needle overlock sewing machine. 4,356,782, Cl. 112-197.000.
Uffenheimer, Kenneth F.: *See*—
Cassaday, Michael M.; Diebler, Herman G.; Svenjak, Dario; and Uffenheimer, Kenneth F., 4,357,301, Cl. 422-64.000.
Ulczok, Stefan: *See*—
Pilarski, Klemens; Ulczok, Stefan; Walkiewicz, Stanislaw; and Rudnicki, Wincenty, 4,357,052, Cl. 299-42.000.
Umemoto, Naoji: *See*—
Masuho, Yasuhiko; Umemoto, Naoji; Hara, Takeshi; and Hirai, Hidematsu, 4,357,273, Cl. 260-112.50R.
Umemoto, Shuichi: *See*—
Ikenoue, Tsuneo; Liu, Shin-yng; Umemoto, Shuichi; and Arai, Naoki, 4,357,654, Cl. 363-21.000.
Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. 3',4'-Diedeoxykanamycin B derivatives. 4,357,465, Cl. 536-13.800.
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; and Jikihara, Tomo, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Processes for the production of 3'-deoxykanamycin A and intermediates. 4,357,466, Cl. 536-13.800.
Umezawa, Sumio: *See*—
Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,357,465, Cl. 536-13.800.
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; and Jikihara, Tomo, 4,357,466, Cl. 536-13.800.
Union Carbide Corporation: *See*—
Miller, John C.; and Burnett, Archibald L., 4,357,291, Cl. 264-176.00R.
Nattinger, Bruce E.; and Vicik, Stephen J., 4,357,376, Cl. 428-35.000.
Pelton, John F., 4,357,004, Cl. 266-225.000.
Schreck, David J., 4,357,440, Cl. 524-535.000.
VanCleve, Russell, 4,357,430, Cl. 521-128.000.
Watson, Stuart L.; and Westfall, Paul M., 4,357,428, Cl. 521-65.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Carr, Neil; Gray, George W.; and Kelly, Stephen M., 4,357,078, Cl. 350-350.00R.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the: *See*—
Bunce, Roger A.; Kennedy, John H.; Kricka, Larry J.; and Whitehead, Thomas P., 4,356,722, Cl. 73-53.000.
United States Gypsum Company: *See*—
Reicherts, James E., 4,356,675, Cl. 52-264.000.
United States of America
Agriculture: *See*—
Jurd, Leonard, 4,357,344, Cl. 424-282.000.
Air Force: *See*—
Skomal, Edward N., 4,357,611, Cl. 343-18.00C.
Army: *See*—
Betts, Robert E., 4,356,720, Cl. 73-37.000.
Blackburn, James C.; and Vanderwall, Jonathan, 4,357,713, Cl. 455-609.000.
Peters, Roswell D. M., 4,357,554, Cl. 310-367.000.
Swieskowski, Henry P., 4,356,653, Cl. 42-50.000.
Wang, Cheng-Chi; and Chu, Muren, 4,357,620, Cl. 357-16.000.
White, James W.; Ruwe, Victor W.; and Davis, Donald R., 4,356,721, Cl. 73-40.700.
Energy: *See*—
Bostick, William D.; Denton, Mark S.; and Dinsmore, Stanley R., 4,357,420, Cl. 435-8.000.
Buttrey, Kenneth E., 4,356,869, Cl. 169-49.000.
Kiefer, Joseph H.; and Smith, Danny J., 4,357,515, Cl. 219-60.200.
Loo, Billy W., 4,357,305, Cl. 422-241.000.
Nelson, Paul A.; and Shimotake, Hiroshi, 4,357,398, Cl. 429-94.000.
Roach, Paul D.; and Raptis, Apostolos C., 4,357,603, Cl. 340-627.000.
Varma, Matesh N.; and Baum, John W., 4,357,536, Cl. 250-397.000.
Health and Human Services: *See*—
Fedan, Jeffrey S.; O'Donnell, John P.; and Hogaboom, G. Kurt, 4,357,341, Cl. 424-273.00R.
Kolobow, Theodor; and Ito, Yoichiro, 4,356,958, Cl. 233-27.000.
Montgomery, John A.; and Shortnacy, Anita T., 4,357,324, Cl. 424-180.000.
Pomerantzeff, Oleg, 4,357,088, Cl. 354-62.000.
National Aeronautics and Space Administration: *See*—
Sheibley, Dean W.; Rieker, Lorra L.; Hsu, Li-Chen; and Manzo, Michelle A., 4,357,402, Cl. 429-206.000.
National Security Agency: *See*—
Miller, Kelly A., 4,357,549, Cl. 307-523.000.
Navy: *See*—
Dale, John R.; and Dickinson, Malcolm I., 4,357,688, Cl. 367-4.000.
Lewis, Bernard L., 4,357,608, Cl. 343-5.0SW.
Molnar, Bela, 4,357,180, Cl. 148-1.500.
Ringbloom, Vernon D., 4,357,185, Cl. 149-6.000.
Stern, Melvin; and True, Daniel G., 4,356,788, Cl. 114-295.000.
Sternberg, Robert L., 4,356,883, Cl. 181-176.000.
U.S. Philips Corporation: *See*—
Belhomme, Charles J. G., 4,357,590, Cl. 338-23.000.
Bierhoff, Martinus P. M.; and Immink, Kornelis A., 4,357,696, Cl. 369-45.000.
Comberg, Albert; and Panstruga, Karl H., 4,357,367, Cl. 427-64.000.
Coulmance, Jean-Pierre R.; and Ricouard, Jean-Pierre, 4,357,652, Cl. 362-276.000.
de Grijs, Johan C.; and Bloem, Herman, 4,356,811, Cl. 126-433.000.
Gerkema, Jan; and Kamerbeek, Evert M. H., 4,357,555, Cl. 378-135.000.
Govaert, George A., 4,357,546, Cl. 307-225.00R.
Grosemans, Jozef A., 4,356,594, Cl. 16-256.000.
Murray, Robert J.; and Mitchell, Richard F., 4,357,584, Cl. 333-195.000.
van der Heide, Hendrik, 4,356,772, Cl. 104-282.000.
van der Ouderaa, Eduard M. A. M., 4,357,658, Cl. 364-200.000.
United States Surgical Corporation: *See*—
Veth, George J., 4,356,825, Cl. 128-630.000.
United Technologies Corporation: *See*—
Andrews, Merritt B.; and Rothman, Edward A., 4,356,678, Cl. 52-799.000.
Chamberlain, John, 4,356,698, Cl. 60-733.000.
Stalcup, Robert K.; and Prewo, Karl M., 4,357,286, Cl. 264-1.200.
Universal Instruments Corporation: *See*—
Snyder, Michael D.; and Soth, Henry J., 4,356,619, Cl. 29-566.300.
Snyder, Michael D.; and Matson, Crawford A., 4,356,949, Cl. 227-76.000.
UOP Inc.: *See*—
Imai, Tamotsu, 4,357,479, Cl. 568-899.000.
Up-Right, Inc.: *See*—
Fisher, Robert E.; and Weiner, Gerhard J., 4,356,887, Cl. 182-63.000.
Upjohn Company, The: *See*—
Nelson, Stephen J., 4,357,347, Cl. 424-298.000.
Walker, Jerry A.; and Hessler, Edward J., 4,357,279, Cl. 260-397.450.
Urban, John A., to Eaton Corporation. Wear indicator for disc brakes. 4,356,897, Cl. 188-1.110.
Uren, Delbert L.; and Thompson, Forrest L., to DIT-MCO International Corporation. Apparatus for use in testing printed circuit process boards having means for positioning such boards in proper juxtaposition with electrical contacting assemblies. 4,357,575, Cl. 324-158.00F.
Urish, Joseph M.: *See*—
Apfelbeck, Otto L.; and Urish, Joseph M., 4,357,524, Cl. 219-501.000.
USM Corporation: *See*—
Sutherland, Clarke R.; and Skinner, Frederick A., 4,356,719, Cl. 72-391.000.
Utsunomiya, Kimitake; Yamada, Hisafumi; and Kuriki, Choei, to Sony Corporation. Ghost cancelling system. 4,357,631, Cl. 358-167.000.
Uzelmeier, Christopher W.: *See*—
Lopez, John A.; and Uzelmeier, Christopher W., 4,357,456, Cl. 528-111.500.

Vaeth, Guenter; Bachmann, Rudolf; Senkpiel, Werner; Hartmann, Hans-Joerg; Falk, Roland; and Motz, Herbert, to BASF Aktiengesellschaft. Magnetic recording media. 4,357,378, Cl. 428-64.000.

Vainshtein, Leonid A.: *See—*
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Obidin, Valery Y.; Pogorelova, Iraida S.; Ogy, Grigory E.; Vainshtein, Leonid A.; and Pann, Lazar A., 4,356,759, Cl. 91-31.000.

Vajda, Stephen, to Jones & Laughlin Steel Corporation. Blast furnace cast house pollutant suppression. 4,357,003, Cl. 266-158.000.

Valeron Corporation, The: *See—*
Zweekly, Raymond T., 4,357,123, Cl. 407-110.000.

Van Brunt, Nicholas P., to Control Data Corporation. Test system for LSI circuits resident on LSI chips. 4,357,703, Cl. 371-15.000.

Van Bryant, Edward, Jr., to M & B Headwear Co., Inc. Convertible recreational device. 4,357,020, Cl. 273-424.000.

VanCleve, Russell, to Union Carbide Corporation. Polymer/polyols, methods for making same and polyurethanes based thereon. 4,357,430, Cl. 521-128.000.

Van den Houte, Jozef W.: *See—*
Vermeulen, Leon L.; Poot, Albert L.; and Van den Houte, Jozef W., 4,357,407, Cl. 430-204.000.

van der Heide, Hendrik, to U.S. Philips Corporation. Magnetically levitated object. 4,356,772, Cl. 104-282.000.

Van der Heijden, Wilhelmus F.; and Intres, Edward L., to Hollandse Signaalapparaten B.V. Video extractor. 4,357,607, Cl. 343-5.0VQ.

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van der Linden, Peter J. M.: *See—*
Bouman, Johannes; and van der Linden, Peter J. M., 4,356,794, Cl. 122-158.000.

van der Ouderaa, Eduard M. A. M., to U.S. Philips Corporation. System for the asynchronous transporting of data between active functional units. 4,357,658, Cl. 364-200.000.

van der Schoot, Jelle, to Staalkat B.V. Method and apparatus for grading and further processing eggs. 4,356,920, Cl. 209-513.000.

Vanderwall, Jonathan: *See—*
Blackburn, James C.; and Vanderwall, Jonathan, 4,357,713, Cl. 455-609.000.

Van Dorst, Ludovicus: *See—*
Mens Franciscus, Willy A.; and Van Dorst, Ludovicus, 4,357,007, Cl. 271-96.000.

Van Dyck, Francis: *See—*
Fernandez, David; and Van Dyck, Francis, 4,357,013, Cl. 273-73.00C.

van Eyken, Lawrence A. J., to Queen's University at Kingston. Hydraulically driven railway car. 4,356,773, Cl. 105-26.100.

van Kessel, Matheus M.: *See—*
Pegels, Abraham A.; and van Kessel, Matheus M., 4,357,304, Cl. 422-191.000.

Varma, Matesh N.; and Baum, John W., to United States of America, Energy. Apparatus and method for monitoring the intensities of charged particle beams. 4,357,536, Cl. 250-397.000.

Varner, Jerry R.: *See—*
Lamberts, Robert L.; and Varner, Jerry R., 4,357,625, Cl. 358-75.000.

Vaughan Walls, Inc.: *See—*
Beckman, Ronald H.; and Yarme, Howard K., 4,356,672, Cl. 52-36.000.

Vazquez, Richard M. Multiple lumen gastrostomy tube. 4,356,824, Cl. 128-350.00R.

VDO Adolf Schindling AG: *See—*
Kern, Eckhart; Collonia, Harald; and Groh, Herbert-Hans, 4,356,802, Cl. 123-339.000.

VEB Fischfang Rostock: *See—*
Trekel, Rainer; Lorenzen, Uwe; Rehme, Wolfgang; Durr, Rolf; Litschko, Hans G.; and Thiele, Wilfried, 4,356,654, Cl. 43-9.000.

Velan, Adolf K., to Velan Engineering Ltd. High pressure bonnetless valve. 4,356,832, Cl. 137-15.000.

Velan Engineering Ltd.: *See—*
Velan, Adolf K., 4,356,832, Cl. 137-15.000.

Ventura, Daniel S.: *See—*
Peterson, Robert R.; and Ventura, Daniel S., 4,357,057, Cl. 308-26.000.

Vereczkey, Endre: *See—*
Takacs, Istvan; Felmeri, Jozsef; Kerey, Gyorgy; Rudolf, Peter; Banos, Zoltan; Vereczkey, Endre; and Bosits, Gyula, 4,357,306, Cl. 422-254.000.

Verge, Cyril A. Splashguard for vehicles. 4,357,030, Cl. 280-154.50R.

Vermeulen, Leon L.; Poot, Albert L.; and Van den Houte, Jozef W., to AGFA-Gevaert N.V. Production of reverse reading positive images of a straight reading original. 4,357,407, Cl. 430-204.000.

Vernon, Ruth P.; and Cox, James L. Differential thermal garment. 4,356,570, Cl. 2-16.000.

Veth, George J., to United States Surgical Corporation. Method and system for measuring rate of occurrence of a physiological parameter. 4,356,825, Cl. 128-630.000.

Vezza, Anthony S.: *See—*
Saltz, Warren L.; and Vezza, Anthony S., 4,357,656, Cl. 364-200.000.

Vicik, Stephen J.: *See—*
Nattinger, Bruce E.; and Vicik, Stephen J., 4,357,376, Cl. 428-35.000.

Victor Company of Japan, Limited: *See—*
Takehara, Hideaki; Wada, Yoshiyo; Goto, Kunio; Suga, Kyusaku; and Watanabe, Hitoshi, 4,357,699, Cl. 369-173.000.

Vikre, Merle A. Irrigation system and constant volume sprinkler head therefor. 4,356,972, Cl. 239-177.000.

Vinals, Joaquin F.: *See—*
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,357,246. Cl. 252-8.600.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,357,253, Cl. 252-174.110.

Visual Marketing, Inc.: *See—*
Young, Raymond R.; Barnes, Russell M.; and Wendel, Donald W., 4,356,923, Cl. 211-49.00D.

Vock, Manfred H.: *See—*
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Voest-Alpine Aktiengesellschaft: *See—*
Aschauer, Hans, 4,356,716, Cl. 72-322.000.

Vogel, Kenneth E., to McQuay-Perfex Inc. Refrigeration defrost control. 4,356,703, Cl. 62-155.000.

von Bogdandy, Ludwig; and Brotzmann, Karl, to Klockner-Werke AG. Process for improving the use of heat in steel production from solid iron material. 4,357,160, Cl. 75-60.000.

von Tomkewitsch, Romuald, to Siemens Aktiengesellschaft. Guidance system for individual traffic. 4,357,593, Cl. 340-23.000.

Vopilov, Alexandr N.: *See—*
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakvaev, Alexandr D.; and Vopilov, Alexandr N., 4,357,161, Cl. 75-153.000.

Voris, Harvey C., to Paramount Health Equipment Corporation. Adapting structure for exercise machines. 4,357,011, Cl. 272-118.000.

Vosper, Ralph R.; and Harthun, Norman E., to Coen Company, Inc. Energy saving fuel oil atomizer. 4,356,970, Cl. 239-8.000.

Voynovich, Anthony. Tamper resistant valve actuator for fire hydrant. 4,356,839, Cl. 137-296.000.

W. H. Brady Co.: *See—*
Wirth, Gary J., 4,357,585, Cl. 335-205.000.

W. R. Grace & Co.: *See—*
Chiang, Robert L., 4,357,265, Cl. 252-455.00Z.

Wacker-Chemie GmbH: *See—*
Huber, Peter; and Meusel, Jurgen, 4,357,252, Cl. 252-78.300.

Wacker-Werke GmbH & Co. KG: *See—*
Riedl, Franz, 4,356,736, Cl. 74-61.000.

Wackerbarth, Folkard; Halbherr, Gerd; and Kuhlmann, Horst, to Dr. C. Otto & Comp. G.m.b.H. Air control arrangement for regeneratively-heated coke ovens. 4,357,211, Cl. 202-111.000.

Wada, Yoshiyo: *See—*
Takehara, Hideaki; Wada, Yoshiyo; Goto, Kunio; Suga, Kyusaku; and Watanabe, Hitoshi, 4,357,699, Cl. 369-173.000.

Waghorn, Robert D., to Bendix Corporation, The. Apparatus for automatically inserting an electrical contact into an electrical connector. 4,356,626, Cl. 29-747.000.

Wagner, Kuno: *See—*
Stemmler, Ingo; Muller, Hanns-Peter; and Wagner, Kuno, 4,357,255, Cl. 252-182.000.

Wagner, Richard P. Method and apparatus for door protection. 4,356,668, Cl. 49-506.000.

Wahlstrom, Lennart; and Ehnstrom, Lars K. J., to Alfa-Laval AB. Casing for rotary machine. 4,356,932, Cl. 220-329.000.

Wakahara, Yasushi: *See—*
Ikeda, Yoshikazu; and Wakahara, Yasushi, 4,357,674, Cl. 364-768.000.

Wakatsuki, Goroei: *See—*
Watanabe, Masaki; Wakatsuki, Goroei; and Suzuki, Keiji, 4,356,876, Cl. 180-210.000.

Walker, Jerry A.; and Hessler, Edward J., to Upjohn Company, The. Preparation of corticoids from 17-keto steroids. 4,357,279, Cl. 260-397.450.

Walkiewicz, Stanislaw: *See—*
Pilarski, Klemens; Ulczok, Stefan; Walkiewicz, Stanislaw; and Rudnicki, Wincenty, 4,357,052, Cl. 299-42.000.

Wallasch, Lutz; and Grundler, Helmut K. Liquid-operated reciprocating prime mover assembly and body washing apparatus incorporating same. 4,356,583, Cl. 15-21.00E.

Wallin, Gerd E.: *See—*
Holmberg, Krister; Johansson, Jan-Allan Y.; and Wallin, Gerd E., 4,357,454, Cl. 527-403.000.

Walter Dittel GmbH Luftfahrtgeratebau: *See—*
Kramer, Ludwig; Franz, Otto; and Lotze, Walter, 4,357,710, Cl. 455-76.000.

Walter, John, to Continental Group, Inc., The. Container closure with retainer hinge. 4,356,924, Cl. 215-237.000.

Walter, Lothar: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Dobhan, Herbert; and Horling, Peter, 4,357,056, Cl. 308-6.00C.

Wang, Cheng-Chi; and Chu, Muren, to United States of America, Army. Liquid-phase epitaxial growth of cdTe on HgCdTe. 4,357,620, Cl. 357-16.000.

Ward, Elizabeth M.; and Buckingham, Gerald, to Diversey Corporation, The. Filter device and filter element for use therein. 4,356,791, Cl. 119-14.430.

Ward, Howard L.: *See—*
Protell, Martin R.; and Ward, Howard L., 4,356,585, Cl. 15-111.000.

Warncke, Heinz: *See—*
Nicklaus, Eberhard; Warncke, Heinz; Pross, Wilhelm; and Hartl, Wolfgang, 4,357,300, Cl. 422-62.000.

Warner-Lambert Company: *See—*
Koch, Edwin R.; and Glass, Michael, 4,357,355, Cl. 426-4.000.
Schutt, Ernest G., 4,357,311, Cl. 424-12.000.

Watanabe, Hitoshi: *See—*
Takehara, Hideaki; Wada, Yoshiyo; Goto, Kunio; Suga, Kyusaku; and Watanabe, Hitoshi, 4,357,699, Cl. 369-173.000.

Watanabe, Kunihiko: *See—*
Niinomi, Naoyuki; and Watanabe, Kunihiko, 4,356,751, Cl. 84-1.030.

Watanabe, Masaki; Wakatsuki, Goroei; and Suzuki, Keiji, to Honda Giken Kogyo Kabushiki Kaisha. Parking apparatus for use on a three-wheeled motorized vehicle. 4,356,876, Cl. 180-210.000.

Watanabe, Tsuguo: *See—*
Sumi, Yasuo; Watanabe, Tsuguo; and Yamane, Ken, 4,356,695, Cl. 60-602.000.

Watanabe, Yoshiaki; Yokoo, Chihiro; Asaka, Toshifumi; Onodera, Akira; Sota, Kaoru; and Sawada, Jiro, to Taisho Pharmaceutical Co., Ltd. Cephalosporin compounds. 4,357,470, Cl. 544-27.000.

Waters, Michael J.; Taschereau, Andre; and Fortin, Jacques, to Marine Industrie Limitee. Integrated tug-barge vessel. 4,356,784, Cl. 114-248.000.

Watson, Stuart L.; and Westfall, Paul M., to Union Carbide Corporation. Foamable composition. 4,357,428, Cl. 521-65.000.

Wear, Charles W.; and Carl, Robert J. Truck bolster flange and wear ring. 4,356,774, Cl. 105-199.00C.

Weaver, William N.: *See—*
Olsen, Robert C.; and Weaver, William N., 4,356,914, Cl. 206-150.000.

Weber, Wolf-Dietrich: *See—*
Quinkert, Gerhard; Weber, Wolf-Dietrich; and Schwartz, Ulrich, 4,357,278, Cl. 260-397.450.

Weiner, Gerhard J.: *See—*
Fisher, Robert E.; and Weiner, Gerhard J., 4,356,887, Cl. 182-63.000.

Weiss, Peter, to Jagenberg Werke AG. Device for braking winding cores. 4,356,983, Cl. 242-75.400.

Welch, George A. Bag closure device. 4,356,600, Cl. 24-30.50R.

Wendel, Donald W.: *See—*
Young, Raymond R.; Barnes, Russell M.; and Wendel, Donald W., 4,356,923, Cl. 211-49.00D.

Wenger, Clayton P.; and Reeves, Clifford A. Tubeless tire valve stem and cover. 4,356,836, Cl. 137-232.000.

Werner, Heinz-Helmut, to Intermedicat GmbH. Process for the manufacture of sclero protein transplants with increased biological stability. 4,357,274, Cl. 260-123.700.

Werner, Peter, to Siemens Aktiengesellschaft. High-voltage circuit breaker. 4,357,508, Cl. 200-148.00H.

Wersland, Palmer: *See—*
Gundersen, George; Oien, Ewald; Eide, Ragnar; Wersland, Palmer; Borgersen, Kristian; Kloster, Paul, deceased; and Johnsen, Ketil, executor, 4,356,596, Cl. 17-58.000.

West, C. Thomas; and Basalay, Robert J., to Standard Oil Company (Indiana). Hydrocarbon-soluble oxidized, sulfurized polyamine-molbdenum compositions and gasoline containing same. 4,357,149, Cl. 44-68.000.

West, Lynn P.: *See—*
Alvarez, Joseph A., III; Gobioff, Bruce D.; and West, Lynn P., 4,357,700, Cl. 370-83.000.

Westerlund, Allan G. Doorcatch. 4,357,038, Cl. 292-270.000.

Western Electric Co., Inc.: *See—*
Large, Donald M., 4,356,905, Cl. 198-366.000.
Milora, Carmen J., 4,357,069, Cl. 339-275.00R.

Westerwalder Eisenwerk Gerhard GmbH: *See—*
Gerhard, Helmut, 4,356,925, Cl. 220-1.500.

Westfall, Paul M.: *See—*
Watson, Stuart L.; and Westfall, Paul M., 4,357,428, Cl. 521-65.000.

Westinghouse Electric Corp.: *See—*
Apfelbeck, Otto L.; and Urish, Joseph M., 4,357,524, Cl. 219-501.000.
Bartko, John; Felice, Patrick E.; and Blais, Phillip D., 4,357,417, Cl. 430-323.000.
Beck, Henry R., 4,357,502, Cl. 200-1.00V.
Dickinson, John D., 4,356,837, Cl. 137-238.000.
Eckels, Phillip W.; Litz, Donald C.; and Patterson, Adolphus, 4,356,700, Cl. 62-55.000.
Feilchenfeld, Michal M., 4,357,596, Cl. 340-146.30Z.
Hardman, Carl C.; and Folser, George R., 4,357,224, Cl. 204-255.000.
Hickam, William M.; Lee, Pang-Kai; and Lindsay, William T., Jr., 4,357,576, Cl. 324-450.000.
Ho, Shih-Ming; Yoldas, Bulent E.; and Mattox, Douglas M., 4,357,427, Cl. 501-153.000.
Kappenhagen, George A.; Martin, Niles J.; Pace, John E.; Sette, Robert A.; Randall, Charles E.; Jackson, Leigh F.; and Bains, Gurdip S., 4,356,895, Cl. 187-17.000.
Kirschbaum, Herbert S., 4,357,542, Cl. 290-44.000.
May, Klaus D.; and Eckstein, Dana L., 4,357,544, Cl. 307-34.000.
Melvin, Waymon A., Jr., 4,357,598, Cl. 340-310.00A.
Sattler, Frank A., 4,357,219, Cl. 204-159.150.
Schmidt, Warren J., 4,357,644, Cl. 361-76.000.

Wetzel, William H.: *See—*
Amundsen, Joseph; Goodwin, Robert J.; and Wetzel, William H., 4,357,163, Cl. 106-18.350.

Wetzels, Walter: *See—*
Bock, Erwin; and Wetzels, Walter, 4,356,715, Cl. 72-98.000.

Weyn, Hendrik F.; Baines, Eric; and Harvey, Kenneth, to Colgate-Palmolive Company. Dental cream composition. 4,357,317, Cl. 424-52.000.

Wharton, James H., to RCA Corporation. Video disc player with burst remover. 4,357,628, Cl. 358-317.000.

White, Eugene W. Heat engines. 4,356,697, Cl. 60-682.000.

White, Hollis N., Jr. Rotary gerotor hydraulic device with fluid control passageways through the rotor. 4,357,133, Cl. 418-61.00B.

White, James W.; Ruwe, Victor W.; and Davis, Donald R., to United States of America, Army. Glass lead seal test apparatus. 4,356,721, Cl. 73-40.700.

White, Mary A.; and Brezniak, Diane V., to General Electric Company. One package, moisture curable, organopolysiloxane compositions and method for making. 4,357,443, Cl. 524-860.000.

Whitehead, Thomas P.: *See—*
Bunce, Roger A.; Kennedy, John H.; Kricka, Larry J.; and Whitehead, Thomas P., 4,356,722, Cl. 73-53.000.

Whitehouse, John A., to AEW Engineering Co., Ltd. Apparatus for portioning meat. 4,356,746, Cl. 83-411.00A.

Whiteside, George D.: *See—*
Johnson, Bruce K.; and Whiteside, George D., 4,357,083, Cl. 354-22.000.

Whittemore, Terrance R.: *See—*
Campbell, Eugene; and Whittemore, Terrance R., 4,357,492, Cl. 179-1.0AT.

Widder, Kenneth J.: *See—*
Senyei, Andrew E.; and Widder, Kenneth J., 4,357,259, Cl. 252-316.000.

Widen, Bo G., to GKN Stenman, AB. Cylinder lock and key. 4,356,713, Cl. 70-364.00A.

Widmann, Dietrich, to Siemens Aktiengesellschaft. Method of producing low-resistance diffused regions in IC MOS semiconductor circuits in silicon-gate technology metal silicide layer formation. 4,356,622, Cl. 29-571.000.

Widmer, Gilbert C.: *See—*
Tschirren, Jean D.; Widmer, Gilbert C.; Pellaux, Jean-Paul; Coche, Andre; and Samsel, Marcel R., 4,357,106, Cl. 356-44.000.

Wilde, James D.; and Hoffman, Rolland L., to North American Mfg. Company. Method and system for controlling multi-zone reheating furnaces. 4,357,135, Cl. 432-11.000.

Wiley, Robert A.; Williams, Theodore F.; and Davis, James W., to Mead Corporation, The. Ink jet printer and charge decoupling device therefor. 4,357,613, Cl. 346-75.000.

Williams, Theodore F.: *See—*
Wiley, Robert A.; Williams, Theodore F.; and Davis, James W., 4,357,613, Cl. 346-75.000.

Williamson, James H., Jr. Method for molding a mounting member in place. 4,357,293, Cl. 264-275.000.

Wilson, Michael: *See—*
Ehrlich, Paul; and Wilson, Michael, 4,357,594, Cl. 340-72.000.

Wilson, R. Marshall; and Rekers, John W., to Research Corporation. Control of pine beetles with 1,5-dimethyl-6,7-diazabicyclo[3.2.1]oct-6-ene. 4,357,339, Cl. 424-273.00P.

Wilson, Robert C.: *See—*
Heck, Roland H.; Cleck, Stephen M.; Shih, Stuart S.; and Wilson, Robert C., 4,357,263, Cl. 252-439.000.

Wilson, Robert J., to General Fabric Fusing, Inc. Apparatus for bonding a pocket blank to a garment portion. 4,357,197, Cl. 156-354.000.

Wilson, Ted R. Thermoplastic building enclosure member. 4,357,381, Cl. 428-174.000.

Wilson, Thomas T., to Epoxon Products, Inc. Louvered panel assembly with chain type ladder tapes. 4,356,857, Cl. 160-229.00B.

Windmoller & Holscher: *See—*
Feldkamper, Richard; Achelpohl, Fritz; and Winnemoller, Aloys, 4,357,139, Cl. 493-204.000.

Winke, Angos: *See—*
Macias, Helene; and Winke, Angos, 4,356,818, Cl. 128-138.00A.

Winnemoller, Aloys: *See—*
Feldkamper, Richard; Achelpohl, Fritz; and Winnemoller, Aloys, 4,357,139, Cl. 493-204.000.

Winslow, John S., to Discovision Associates. Focus detector for an optical disc playback system. 4,357,533, Cl. 250-204.000.

Winstead-Hall, Deborah. Syringe assembly. 4,356,822, Cl. 128-215.000.

Winter, Joseph, to Olin Corporation. Process for recrystallization of thin strip material. 4,356,861, Cl. 164-462.000.

Wirschal, Helmut H., to Allis-Chalmers Corporation. Flap-gate for bottom discharge control in canals having ice problems. 4,357,121, Cl. 405-100.000.

Wirth, Gary J., to W. H. Brady Co. Laminated magnetic switch. 4,357,585, Cl. 335-205.000.

Wirz, Armin: *See*—
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,356,604, Cl. 28-255.000.
Wirz, Ernst: *See*—
Gassert, Willy, 4,356,842, Cl. 137-625.600.
Wittkus, Heinz: *See*—
Engelhardt, Friedrich; Riegel, Ulrich; Hille, Martin; and Wittkus, Heinz, 4,357,245, Cl. 252-8.50C.
Witzel, Frank: *See*—
Kehoe, Gary; Puglia, Wayne J.; Witzel, Frank; Friello, Dominick R.; and Mackay, Donald A. M., 4,357,354, Cl. 426-3.000.
Wodka, Michael A.: *See*—
Propst, Robert L.; Wodka, Michael A.; and Hodges, Ronald R., 4,356,674, Cl. 52-242.000.
Wolfe, Raymond: *See*—
Muehlner, Dirk J.; Nelson, Terence J.; and Wolfe, Raymond, 4,357,684, Cl. 365-36.000.
Wolff Walsrode AG: *See*—
Huhn, Helmut; Karstens, Werner; and Hoppe, Lutz, 4,357,437, Cl. 524-458.000.
Wollermann, Kenneth A., to Kearney & Trecker Corporation. Spindle keylock. 4,356,609, Cl. 29-48.50R.
Wolters, Richard A., Jr.; Lee, Tommy C.; and Matzner, Bruce, to General Electric Company. Nuclear fuel assembly space arrangement. 4,357,298, Cl. 376-441.000.
Wong, Joe: *See*—
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,357,395, Cl. 428-607.000.
Wong, Rayman Y., to Stauffer Chemical Company. Certain 2,2-dimethyl-3-(ethenyl or propenyl)-cyclopropane carboxylic acid esters of the pyridyl-lower alkyl series having insect repelling properties. 4,357,336, Cl. 424-263.000.
Woo, Way D.; and Steddom, William, to Dennison Manufacturing Company. Web transport control circuit. 4,357,560, Cl. 318-7.000.
Woodworth, Clinton A. Keeper device for portable electric hand-drills. 4,357,044, Cl. 294-137.000.
Worth, Robert N.; and Parson, Larry T., to Northrop Corporation. Tow body system-target drone. 4,356,984, Cl. 244-1.0TD.
Wouters, Howard L. Floatball apparatus. 4,357,019, Cl. 273-411.000.
Wreghitt, Kenneth W.: *See*—
Atanasoff, John V.; Clark, W. Kenneth; Henderson, David; and Wreghitt, Kenneth W., 4,356,770, Cl. 102-384.000.
Wright, Jerry A.: *See*—
Sloan, Cephas H.; Wright, Jerry A.; and Morie, Gerald P., 4,357,379, Cl. 428-113.000.
Wu, Yulin; and Zuech, Ernest A., to Phillips Petroleum Company. Low viscosity slurry and method of preparing same. 4,357,257, Cl. 252-308.000.
Xerox Corporation: *See*—
DuVall, Wilbur E., 4,357,566, Cl. 318-636.000.
Johnson, Richard V., 4,357,627, Cl. 358-348.000.
Marshall, Fred; and Fogarasy, Attila A., 4,356,947, Cl. 227-5.000.
Yamada, Hisafumi: *See*—
Utsunomiya, Kimitake; Yamada, Hisafumi; and Kuriki, Choei, 4,357,631, Cl. 358-167.000.
Yamada, Minoru; and Ito, Rokuzo, to Canada Wire and Cable Limited. Apparatus for stranding multi-layer cable. 4,356,846, Cl. 140-115.000.
Yamada, Yujiro: *See*—
Iwamatsu, Katsuyoshi; Inoue, Shigeharu; Miyauchi, Keinosuke; Kondo, Shinichi; Seki, Shigeo; and Yamada, Yujiro, 4,357,331, Cl. 424-246.000.
Yamagata, Shyuji: *See*—
Tomioka, Hirotaka; and Yamagata, Shyuji, 4,357,040, Cl. 293-102.000.
Yamaguchi, Hiroyasu: *See*—
Kato, Shuichi; Kusakabe, Hiromi; Yamaguchi, Hiroyasu; and Yoshida, Yoshihiro, 4,357,579, Cl. 330-297.000.
Yamaguchi, Takaaki, to Mitsubishi Gas Chemical Company, Inc. Sodium hydrosulfite composition. 4,357,256, Cl. 252-188.240.
Yamamoto, Kaname, to Tajima Roofing Co., Ltd. Thermal insulating and bituminous waterproofing board and application process thereof. 4,357,377, Cl. 428-40.000.
Yamamoto, Shigeyoshi; Sagawa, Nobukazu; and Nakanishi, Noriyoshi, to Kyoto Ceramic Kabushiki Kaisha. Ceramic heater. 4,357,526, Cl. 219-544.000.
Yamamura, Akira, to Ferrofluidics Corporation. Ferrofluid rotary-shaft seal apparatus and method. 4,357,023, Cl. 277-1.000.
Yamane, Ken: *See*—
Sumi, Yasuo; Watanabe, Tsuguo; and Yamane, Ken, 4,356,695, Cl. 60-602.000.
Yamashita, Mitsuo: *See*—
Takaoka, Takashi; Mochizuki, Masahiko; Miura, Tadao; and Yamashita, Mitsuo, 4,357,366, Cl. 427-54.100.
Yamaura, Sigenobu: *See*—
Arita, Satoshi; Touge, Kiyomi; Shida, Akio; and Yamaura, Sigenobu, 4,357,225, Cl. 204-281.000.
Yamazaki, Etsuo: *See*—
Imazeki, Ryoji; Sasaki, Takao; and Yamazaki, Etsuo, 4,357,664, Cl. 364-474.000.
Yan, Man F.: *See*—
Johnson, David W., Jr.; and Yan, Man F., 4,357,251, Cl. 252-62.570.
Yarme, Howard K.: *See*—
Beckman, Ronald H.; and Yarme, Howard K., 4,356,672, Cl. 52-36.000.
Yasuda, Shuntaro: *See*—
Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,357,465, Cl. 536-13.800.
Yeager, Robert W.; and Gehrett, Larry J., to Goodyear Tire & Rubber Company, The. Aircraft tire. 4,356,985, Cl. 244-103.00R.
Yerkes, John W.: *See*—
Blieden, Harry R.; and Yerkes, John W., 4,357,486, Cl. 136-247.000.
Yevick, George J. High powered laser window-mirror. 4,357,077, Cl. 350-310.000.
Yi, Kong S., to B. F. Goodrich Company, The. Dispersion polymerization of cycloolefins. 4,357,449, Cl. 526-74.000.
Yi, Soo W. Disk complex for reducing electrostatic forces on a record disk. 4,357,697, Cl. 369-72.000.
Yokoo, Chihiro: *See*—
Watanabe, Yoshiaki; Yokoo, Chihiro; Asaka, Toshifumi; Onodera, Akira; Sota, Kaoru; and Sawada, Jiro, 4,357,470, Cl. 544-27.000.
Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Complementary differential amplifier. 4,357,578, Cl. 330-252.000.
Yoldas, Bulent E.: *See*—
Ho, Shih-Ming; Yoldas, Bulent E.; and Mattox, Douglas M., 4,357,427, Cl. 501-153.000.
Yonezawa, Seiji: *See*—
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Shigematsu, Kazuo; Ojima, Masahiro; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,357,616, Cl. 346-135.100.
Yook, Steven S. W.: *See*—
Luciano, William A.; and Yook, Steven S. W., 4,357,386, Cl. 428-234.000.
Yorke, Monica A., to Calgon Corporation. Low molecular weight cationic polymers as deposit inhibitors and dispersants in black liquor recovery systems. 4,357,207, Cl. 159-47.0WL.
Yoshida, Takao: *See*—
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,357,360, Cl. 426-538.000.
Yoshida, Yoshihiro: *See*—
Kato, Shuichi; Kusakabe, Hiromi; Yamaguchi, Hiroyasu; and Yoshida, Yoshihiro, 4,357,579, Cl. 330-297.000.
Yoshiharu, Kuwabara; and Kazushi, Azuma, to Amano Corporation. Cleaning card for time recorder. 4,357,615, Cl. 346-134.000.
Yoshimaru, Tomohisa; and Iida, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Index information recording method for picture information filing system. 4,357,638, Cl. 360-72.200.
Yoshino, Eiichi; Ishikawa, Hidehiko; Inoue, Fumitaka; Takada, Masaki; and Misaki, Hideo, to Toyo Jozo Company, Ltd. Process for producing L-amino acid oxidase. 4,357,425, Cl. 435-191.000.
Yoshino, Yasuhisa, to Nippon Soken, Inc. Apparatus for detecting grade of vehicle from atmospheric pressure difference. 4,356,726, Cl. 73-178.00R.
Young, Raymond R.; Barnes, Russell M.; and Wendel, Donald W., to Visual Marketing, Inc. Storage and dispensing rack. 4,356,923, Cl. 211-49.00D.
Yu, Jing-peir, to Monsanto Company. Splittable conjugate yarn. 4,357,290, Cl. 264-147.000.
Yui, Masatoshi: *See*—
Takamisawa, Kaihei; and Yui, Masatoshi, 4,357,574, Cl. 324-73.00R.
Zahradnik, Raymond L.: *See*—
La Mori, Phillip N.; and Zahradnik, Raymond L., 4,357,214, Cl. 203-100.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,357,465, Cl. 536-13.800.
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; and Jikihara, Tomo, 4,357,466, Cl. 536-13.800.
Zajac, Walter O.: *See*—
Koehler, Daniel L.; and Zajac, Walter O., 4,356,901, Cl. 192-70.200.
Zakaria, Jehangir: *See*—
Porter, James H.; Davis, Robert; and Zakaria, Jehangir, 4,356,779, Cl. 110-245.000.
Zamboni, Richard F., to Frank J. Zamboni & Co. Apparatus for removing water from large surface areas. 4,356,584, Cl. 15-98.000.
Zavodny, Eugene N.: *See*—
Guzder, Shapoor B.; and Zavodny, Eugene N., 4,356,898, Cl. 188-280.000.
Zehnder, Jurg; and Grischott, Jann, to Swiss Aluminium Ltd. Superstructure for road and rail vehicles. 4,357,048, Cl. 296-183.000.
Zeitlow, Ronald A., to International Harvester Co. Motor vehicle fuel tank. 4,357,027, Cl. 280-5.00A.
Zelez, Joseph, to RCA Corporation. Plasma etching of polyimide. 4,357,203, Cl. 156-643.000.
Zengel, Hans-Georg; Bergfeld, Manfred; and Zielke, Rainer, to Akzo NV. Polymere N-halogenamide auf basis von acryl-und methacrylamid. 4,357,447, Cl. 525-329.400.
Zenith Radio Corporation: *See*—
Dougherty, Lawrence W.; and Meyle, William H., 4,356,606, Cl. 29-25.150.
Zepko, Richard F., to Pitney Bowes Inc. Molded scraper for electrophotocopier fixing roller. 4,357,094, Cl. 355-3.0FU.
Zepkowski, John. Ski maneuvering apparatus. 4,357,036, Cl. 280-809.000.
Zhabokrug, Ilya: *See*—
Rath, Lee A.; Sidline, George; and Zhabokrug, Ilya, 4,357,532, Cl. 235-483.000.
Ziaylek, Theodore, Jr. Submerged inlet head for fire hoses and the like. 4,357,238, Cl. 210-232.000.

Zielke, Rainer: *See*—
Zengel, Hans-Georg; Bergfeld, Manfred; and Zielke, Rainer, 4,357,447, Cl. 525-329.400.

Zoecon Corporation: *See*—
Carney, Robert L.; and Lui, Alfred S. T., 4,357,474, Cl. 556-482.000.

Zsadon, Bela: *See*—
Szejtli, Jozsef; Zsadon, Bela; Fenyvesi, Eva; Horvath, nee Otta; Klara; and Tudos, Ferenc, 4,357,468, Cl. 536-56.000.

Zucker, Jerry; Chivers, Carl E.; and Jefferson, Donald E., to RM Industrial Products Company, Inc. Composite insulating material and process. 4,357,436, Cl. 524-448.000.

Zuech, Ernest A.: *See*—
Wu, Yulin; and Zuech, Ernest A., 4,357,257, Cl. 252-308.000.

Zukier, Hubert: *See*—
Hadersbeck, Hans; and Zukier, Hubert, 4,357,647, Cl. 361-400.000.

Zur, Henry C. Bearing systems for bridges, overpasses and structures. 4,356,581, Cl. 14-75.000.

Zurcher, Edwin; Negaty-Hindi, Guy; and Pujol, Carlos, to Battelle Memorial Institute. Method for joining two yarn pieces, and the device for carrying out the method. 4,356,688, Cl. 57-22.000.

Zweekly, Raymond T., to Valeron Corporation, The. Insert retention apparatus. 4,357,123, Cl. 407-110.000.

Zweigle, Maurice L.; and Hickman, Janet C., to Dow Chemical Co., The. Cellulosic compositions useful in preparing hot melts. 4,357,168, Cl. 106-171.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF NOVEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Centurion Industries, Inc.: *See*—
Meyer, Jerome C.; and Tillotson, James A., III, Re. 31,070, Cl. 434-201.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
von Bebenburg, Walter; and Offermanns, Heribert, Re. 31,071, Cl. 260-239.30B.

Eastman Kodak Company: *See*—
Jadwin, Thomas A.; Khanna, Ravi; Merrill, Stewart H.; and Perry, Edmond S., Re. 31,072, Cl. 430-99.000.

Fehrenbacher, Wolfgang, to Kieninger & Obergfell Fabrik fur Technische Laufwerke und Apparate. Electromechanical clock. Re. 31,073, Cl. 368-134.000.

Jadwin, Thomas A.; Khanna, Ravi; Merrill, Stewart H.; and Perry, Edmond S., to Eastman Kodak Company. Electrographic developing composition and process. Re. 31,072, Cl. 430-99.000.

Khanna, Ravi: *See*—
Jadwin, Thomas A.; Khanna, Ravi; Merrill, Stewart H.; and Perry, Edmond S., Re. 31,072, Cl. 430-99.000.

Kieninger & Obergfell Fabrik fur Technische Laufwerke und Apparate: *See*—
Fehrenbacher, Wolfgang, Re. 31,073, Cl. 368-134.000.

Merrill, Stewart H.: *See*—
Jadwin, Thomas A.; Khanna, Ravi; Merrill, Stewart H.; and Perry, Edmond S., Re. 31,072, Cl. 430-99.000.

Meyer, Jerome C.; and Tillotson, James A., III, to Centurion Industries, Inc. Teaching device having means producing a self-generated program. Re. 31,070, Cl. 434-201.000.

Offermanns, Heribert: *See*—
von Bebenburg, Walter; and Offermanns, Heribert, Re. 31,071, Cl. 260-239.30B.

Perry, Edmond S.: *See*—
Jadwin, Thomas A.; Khanna, Ravi; Merrill, Stewart H.; and Perry, Edmond S., Re. 31,072, Cl. 430-99.000.

Tillotson, James A., III: *See*—
Meyer, Jerome C.; and Tillotson, James A., III, Re. 31,070, Cl. 434-201.000.

von Bebenburg, Walter; and Offermanns, Heribert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. 6-Aza-3H-1,4-benzodiazepines. Re. 31,071, Cl. 260-239.30B.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Alekhin, Vladimir Yakovlevich; Ioff, Mark Moiseevich; and Streshneva, Antonina Mikhailovna, Method of Reduction of an Oxidized Surface of Copper or its Alloys. B1 3,986,378. Cl. 72–38.

Cone, Clendon W., to Webco Development Corp. Gluing Machine. B1 4,270,967, Cl. 156–299.

Webco Development Corp.: *See*—
Cone, Clendon W. B1 4,270,967, Cl. 156–299.

Altec Corporation: *See*—
Rumbaugh, Paul S. B1 4,081,757, Cl. 330–124R.

Rumbaugh, Paul S., to Altec Corporation. Parallel Power Amplifier Circuits, B1 4,081,757, Cl. 330–124R.

Altec Corporation: *See*—Rumbaugh, Paul S. B1 4,081,757, Cl. 330–124R.

Simko, Richard T., to Intel Corporation. Electrically Programmable and Electrically Erasable MOS Memory Cell. B1 4,119,995, Cl. 357–23.

Intel Corporation: *See*—
Simko, Richard T. B1 4,119,995, Cl. 357–23.

LIST OF DESIGN PATENTEES

A. Ahlstrom Osakeyhtio: *See*—
Sarpaneva, Timo, 266,725, Cl. D7-13.000.

Abbott Laboratories: *See*—
D'Alo, Herbert F., 266,737, Cl. D8-396.000.

AMC Appliances: *See*—
Downey, John, 266,731, Cl. D7-87.000.

American Commercial Incorporated: *See*—
Blake, Alfred, 266,723, Cl. D7-9.000.
Blake, Alfred, 266,726, Cl. D7-18.000.
Blake, Alfred, 266,727, Cl. D7-30.000.
Blake, Alfred, 266,729, Cl. D7-64.000.
Blake, Alfred, 266,730, Cl. D7-66.000.

American Hospital Supply Corporation: *See*—
McCord, Kenneth R., 266,790, Cl. D24-53.000.

Appel, Mel; and Kress, George, to Appel, Mel. Toy racing car. 266,779, 11-2-82, Cl. D21-137.000.

Baffo, Charles M.: *See*—
Brown, Philip R.; and Baffo, Charles M., 266,774, Cl. D20-41.000.

Baggio, Alessandro: *See*—
Plewes, William J.; Baggio, Alessandro; and Letzin, Wolfgang, 266,739, Cl. D9-349.000.

Bevilacqua, Ernest M.; Danielson, David C.; Griffith, Robert E.; Hawthorne, Allen D.; and McCroskery, Allan L., to International Business Machines Corporation. Typewriter. 266,768, 11-2-82, Cl. D18-1.000.

Blake, Alfred, to American Commercial Incorporated. Cup. 266,723, 11-2-82, Cl. D7-9.000.

Blake, Alfred, to American Commercial Incorporated. Sugar bowl. 266,726, 11-2-82, Cl. D7-18.000.

Blake, Alfred, to American Commercial Incorporated. Saucer. 266,727, 11-2-82, Cl. D7-30.000.

Blake, Alfred, to American Commercial Incorporated. Creamer pitcher. 266,729, 11-2-82, Cl. D7-64.000.

Blake, Alfred, to American Commercial Incorporated. Teapot. 266,730, 11-2-82, Cl. D7-66.000.

Branson Ultrasonics Corporation: *See*—
Puskas, William L.; and Dussault, Jean G. M., 266,794, Cl. D32-1.000.

Brown, Christopher, to Hoody Corporation. Packaging container. 266,743, 11-2-82, Cl. D9-416.000.

Brown, Philip R.; and Baffo, Charles M., to Mobil Oil Corporation. Hanging sign. 266,774, 11-2-82, Cl. D20-41.000.

Bulk Manufacturing Co., Inc.: *See*—
Poirier, Robert D., 266,773, Cl. D20-1.000.
Bunger, Richard E.; and Hancock, Roy J., to Corral Industries, Inc. Cattle feed bunker. 266,793, 11-2-82, Cl. D30-13.000.
Bushnell, Roger J.: *See*—
Trussler, Peter D. H.; and Bushnell, Roger J., 266,760, Cl. D14-100.000.
Caldwell, John W., to Pacific Furniture Manufacturing Co. Seat. 266,716, 11-2-82, Cl. D6-69.000.
Campbell, Stephen W.; Cragg, Eric E.; Elwell, Michael J.; and Johnson, Raymond A., to Lucas Industries Limited. Electrical storage battery. 266,757, 11-2-82, Cl. D13-8.000.
Camps, Maria-Teresa B. Lettering pen. 266,769, 11-2-82, Cl. D19-51.000.
Carter, Richard E. Golfing aid. 266,782, 11-2-82, Cl. D21-234.000.
Chiou, Chuang-Min. Ink trough. 266,745, 11-2-82, Cl. D10-61.000.
Claxton, Bruce A., to SCM Corporation. Print element container. 266,742, 11-2-82, Cl. D9-415.000.
Clune, Charles A., to Midmark Corporation. Self-propelled trenching machine. 266,765, 11-2-82, Cl. D15-21.000.
Cooper, Howard. Bottle. 266,738, 11-2-82, Cl. D9-307.000.
Corral Industries, Inc.: *See*—
Bunger, Richard E.; and Hancock, Roy J., 266,793, Cl. D30-13.000.
Cox, John A., to Mobay Chemical Corporation. Plastic container for liquids. 266,741, 11-2-82, Cl. D9-401.000.
Cragg, Eric E.: *See*—
Campbell, Stephen W.; Cragg, Eric E.; Elwell, Michael J.; and Johnson, Raymond A., 266,757, Cl. D13-8.000.
Crespi, Gabriella. Openable desk and shelf combination unit. 266,714, 11-2-82, Cl. D6-4.000.
D'Alo, Herbert F., to Abbott Laboratories. Grippable tubing clamp, or the like. 266,737, 11-2-82, Cl. D8-396.000.
Danielson, David C.: *See*—
Bevilacqua, Ernest M.; Danielson, David C.; Griffith, Robert E.; Hawthorne, Allen D.; and McCroskery, Allan L., 266,768, Cl. D18-1.000.
Downey, John, to AMC Appliances. Cooking appliance or similar article. 266,731, 11-2-82, Cl. D7-87.000.
DuBois, Gayle K.; and Warner, Joyce E. Sun bathing tub. 266,788, 11-2-82, Cl. D24-38.000.
Durand, Jean-Jacques. Goblet or similar article. 266,724, 11-2-82, Cl. D7-11.000.
Dussault, Jean G. M.: *See*—
Puskas, William L.; and Dussault, Jean G. M., 266,794, Cl. D32-1.000.
Echterling, Eugene J. Toy carriage. 266,776, 11-2-82, Cl. D21-134.000.
Elwell, Michael J.: *See*—
Campbell, Stephen W.; Cragg, Eric E.; Elwell, Michael J.; and Johnson, Raymond A., 266,757, Cl. D13-8.000.
Entex Industries, Inc.: *See*—
Hanzawa, Tsuneo, 266,775, Cl. D21-13.000.
Fiat Veicoli Industriali S.p.A.: *See*—
Magnini, Guido, 266,756, Cl. D12-98.000.
Fossella, Gregory F.; and Milliser, Charles E., to General Electric Company. Cabinet for an input-output device. 266,764, 11-2-82, Cl. D14-100.000.
General Electric Company: *See*—
Fossella, Gregory F.; and Milliser, Charles E., 266,764, Cl. D14-100.000.
General Foods Inc.: *See*—
Plewes, William J.; Baggio, Alessandro; and Letzin, Wolfgang, 266,739, Cl. D9-349.000.
Genta, Gerald, to K. Hattori & Co., Ltd. Wristwatch. 266,744, 11-2-82, Cl. D10-32.000.
Gibson, J. Scott, to Mitel Corporation. Telephone line and trunk status display. 266,762, 11-2-82, Cl. D14-58.000.
Gilford, Ira B., to Reiner, Lawrence L. Combined toy owl and cage charm. 266,747, 11-2-82, Cl. D11-2.000.
Gooding, Elwyn R., to University of Michigan, The Regents of the. Police helmet. 266,711, 11-2-82, Cl. D2-231.000.
Grae, Bernard A., to Tandy Corporation. Telephone housing. 266,763, 11-2-82, Cl. D14-64.000.
Griffith, Robert E.: *See*—
Bevilacqua, Ernest M.; Danielson, David C.; Griffith, Robert E.; Hawthorne, Allen D.; and McCroskery, Allan L., 266,768, Cl. D18-1.000.
Hahn, Jerome S. Knife. 266,735, 11-2-82, Cl. D7-151.000.
Hancock, Roy J.: *See*—
Bunger, Richard E.; and Hancock, Roy J., 266,793, Cl. D30-13.000.
Hanzawa, Tsuneo, to Entex Industries, Inc. Hand-held electronic pinball game housing or the like. 266,775, 11-2-82, Cl. D21-13.000.
Harrison, William H. Brush attachment for skate board or similar article. 266,781, 11-2-82, Cl. D21-227.000.
Hawthorne, Allen D.: *See*—
Bevilacqua, Ernest M.; Danielson, David C.; Griffith, Robert E.; Hawthorne, Allen D.; and McCroskery, Allan L., 266,768, Cl. D18-1.000.
Hilko, Steven E., to Quaker Oats Company, The. Toy police car. 266,778, 11-2-82, Cl. D21-136.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Zaima, Hiroshi; and Takahashi, Yoshitake, 266,755, Cl. D12-91.000.
Hoody Corporation: *See*—
Brown, Christopher, 266,743, Cl. D9-416.000.
Hopkins, Richard B., to Knoll International, Inc. Combined writing tablet and support arm therefor. 266,719, 11-2-82, Cl. D6-191.000.
Hyatt, Jesse. Stringed musical instrument. 266,767, 11-2-82, Cl. D17-19.000.
International Business Machines Corporation: *See*—
Bevilacqua, Ernest M.; Danielson, David C.; Griffith, Robert E.; Hawthorne, Allen D.; and McCroskery, Allan L., 266,768, Cl. D18-1.000.
Ivy, James R. Egg cracker. 266,728, 11-2-82, Cl. D7-41.000.
Jabara, Brock M., to Superior Sound, Inc. Speaker cabinet. 266,759, 11-2-82, Cl. D14-33.000.
Johannsen, Thomas M.; Mosley, Raymond P.; and Knoll, James P., to Technicare Corporation. Hand-held control module for an ultrasound diagnostic imaging system. 266,758, 11-2-82, Cl. D13-12.000.
John J. Madison Co., Inc.: *See*—
Santa-Eulalia Carbajales, Jesus A.; and Santa-Eulalia Carbajales, Javier B., 266,751, Cl. D11-158.000.
Santa-Eulalia Carbajales, Jesus A.; and Santa-Eulalia Carbajales, Javier B., 266,752, Cl. D11-158.000.
Santa-Eulalia Carbajales, Jesus A.; and Santa-Eulalia Carbajales, Javier B., 266,753, Cl. D11-158.000.
Johnson, Raymond A.: *See*—
Campbell, Stephen W.; Cragg, Eric E.; Elwell, Michael J.; and Johnson, Raymond A., 266,757, Cl. D13-8.000.
Johnston, Joseph E.: *See*—
Lucas, George W., Jr.; and Johnston, Joseph E., 266,777, Cl. D21-134.000.
K. Hattori & Co., Ltd.: *See*—
Genta, Gerald, 266,744, Cl. D10-32.000.
Kelley, Craig B., to SCM Corporation. Toaster. 266,732, 11-2-82, Cl. D7-93.000.
Knoll International, Inc.: *See*—
Hopkins, Richard B., 266,719, Cl. D6-191.000.
Stephens, William I., 266,722, Cl. D6-196.000.
Knoll, James P.: *See*—
Johannsen, Thomas M.; Mosley, Raymond P.; and Knoll, James P., 266,758, Cl. D13-12.000.
Kodet, John. Pot for flowers, plants or the like. 266,750, 11-2-82, Cl. D11-152.000.
Kress, George: *See*—
Appel, Mel; and Kress, George, 266,779, Cl. D21-137.000.
Lane Company, Inc., The: *See*—
Welch, Kristin M., 266,721, Cl. D6-192.000.
Lawson, Peter, to Rockwell Do Brasil Industria E. Comercio Ltda. Planer. 266,766, 11-2-82, Cl. D15-127.000.
Letzin, Wolfgang: *See*—
Plewes, William J.; Baggio, Alessandro; and Letzin, Wolfgang, 266,739, Cl. D9-349.000.
Lucas, George W., Jr.; and Johnston, Joseph E., to Lucasfilm, Ltd. Toy vehicle. 266,777, 11-2-82, Cl. D21-134.000.
Lucas Industries Limited: *See*—
Campbell, Stephen W.; Cragg, Eric E.; Elwell, Michael J.; and Johnson, Raymond A., 266,757, Cl. D13-8.000.
Lucasfilm, Ltd.: *See*—
Lucas, George W., Jr.; and Johnston, Joseph E., 266,777, Cl. D21-134.000.
Mollo, John, 266,780, Cl. D21-171.000.
Magnini, Guido, to Fiat Veicoli Industriali S.p.A. Truck. 266,756, 11-2-82, Cl. D12-98.000.
McCord, Kenneth R., to American Hospital Supply Corporation. Protector housing for squeezable valve. 266,790, 11-2-82, Cl. D24-53.000.
McCroskery, Allan L.: *See*—
Bevilacqua, Ernest M.; Danielson, David C.; Griffith, Robert E.; Hawthorne, Allen D.; and McCroskery, Allan L., 266,768, Cl. D18-1.000.
Midmark Corporation: *See*—
Clune, Charles A., 266,765, Cl. D15-21.000.
Milliser, Charles E.: *See*—
Fossella, Gregory F.; and Milliser, Charles E., 266,764, Cl. D14-100.000.
Mitel Corporation: *See*—
Gibson, J. Scott, 266,762, Cl. D14-58.000.
Mobay Chemical Corporation: *See*—
Cox, John A., 266,741, Cl. D9-401.000.
Mobil Oil Corporation: *See*—
Brown, Philip R.; and Baffo, Charles M., 266,774, Cl. D20-41.000.
Mollo, John, to Lucasfilm, Ltd. Toy figure. 266,780, 11-2-82, Cl. D21-171.000.
Moore, Basil T.; and Zipursky, Morley. Combined kitchen cabinet door and support frame therefor. 266,720, 11-2-82, Cl. D6-192.000.
Mosley, Raymond P.: *See*—
Johannsen, Thomas M.; Mosley, Raymond P.; and Knoll, James P., 266,758, Cl. D13-12.000.
Northern Telecom Limited: *See*—
Trussler, Peter D. H.; and Bushnell, Roger J., 266,760, Cl. D14-100.000.
Oneida Ltd.: *See*—
Richmond, Colin B., II, 266,734, Cl. D7-150.000.
Pacer Technology and Resources, Inc.: *See*—
Stock, Hugh J., 266,740, Cl. D9-370.000.
Pacific Furniture Manufacturing Co.: *See*—
Caldwell, John W., 266,716, Cl. D6-69.000.

Peabody, Lawrence; Schriever, Theodore W.; and Wenczl, Stephen K., to Syroco, Inc. Combined paper towel holder and shelf. 266,718, 11-2-82, Cl. D6-91.000.

Plewes, William J.; Baggio, Alessandro; and Letzin, Wolfgang, to General Foods Inc. Jar. 266,739, 11-2-82, Cl. D9-349.000.

Poirier, Robert D., to Bulk Manufacturing Co., Inc. Vending machine. 266,773, 11-2-82, Cl. D20-1.000.

Puskas, William L.; and Dussault, Jean G. M., to Branson Ultrasonics Corporation. Ultrasonic cleaner. 266,794, 11-2-82, Cl. D32-1.000.

Quaker Oats Company, The: *See*—
Hilko, Steven E., 266,778, Cl. D21-136.000.

Refer, Deborah J. Gum massaging tip. 266,787, 11-2-82, Cl. D24-10.000.

Reiner, Lawrence L.: *See*—
Gilford, Ira B., 266,747, Cl. D11-2.000.

Resnick, Alan J.; and Resnick, Darlene L. Earmuff. 266,713, 11-2-82, Cl. D2-259.000.

Resnick, Darlene L.: *See*—
Resnick, Alan J.; and Resnick, Darlene L., 266,713, Cl. D2-259.000.

Reunanen, Kosti A., to Reunanen & Roviola Oy. Grill. 266,733, 11-2-82, Cl. D7-110.000.

Reunanen & Roviola Oy: *See*—
Reunanen, Kosti A., 266,733, Cl. D7-110.000.

Richardson, Ronald. Diver's helmet. 266,710, 11-2-82, Cl. D2-259.000.

Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 266,734, 11-2-82, Cl. D7-150.000.

Robert Tiffany Designs, Inc.: *See*—
Tiffany, Harry R., III, 266,715, Cl. D6-63.000.

Robertson, Duane D. Cutting tool for flexible plastic conduit. 266,736, 11-2-82, Cl. D8-98.000.

Rockwell Do Brasil Industria E. Comercio Ltda.: *See*—
Lawson, Peter, 266,766, Cl. D15-127.000.

Salton, Inc.: *See*—
Schmidt, George, 266,786, Cl. D23-155.000.

Santa-Eulalia Carbajales, Javier B.: *See*—
Santa-Eulalia Carbajales, Jesus A.; and Santa-Eulalia Carbajales, Javier B., 266,751, Cl. D11-158.000.
Santa-Eulalia Carbajales, Jesus A.; and Santa-Eulalia Carbajales, Javier B., 266,752, Cl. D11-158.000.
Santa-Eulalia Carbajales, Jesus A.; and Santa-Eulalia Carbajales, Javier B., 266,753, Cl. D11-158.000.

Santa-Eulalia Carbajales, Jesus A.; and Santa-Eulalia Carbajales, Javier B., to John J. Madison Co., Inc. Figurine of a husky. 266,751, 11-2-82, Cl. D11-158.000.

Santa-Eulalia Carbajales, Jesus A.; and Santa-Eulalia Carbajales, Javier B., to John J. Madison Co., Inc. Figurine of a west highland terrier. 266,752, 11-2-82, Cl. D11-158.000.

Santa-Eulalia Carbajales, Jesus A.; and Santa-Eulalia Carbajales, Javier B., to John J. Madison Co., Inc. Figurine of a west highland terrier pup. 266,753, 11-2-82, Cl. D11-158.000.

Sarpaneva, Timo, to A. Ahlstrom Osakeyhtio. Goblet or similar article. 266,725, 11-2-82, Cl. D7-13.000.

Sayers, James P. Stacking tray. 266,772, 11-2-82, Cl. D19-92.000.

Schmidt, George, to Salton, Inc. Fan. 266,786, 11-2-82, Cl. D23-155.000.

Schriever, Theodore W.: *See*—
Peabody, Lawrence; Schriever, Theodore W.; and Wenczl, Stephen K., 266,718, Cl. D6-91.000.

SCM Corporation: *See*—
Claxton, Bruce A., 266,742, Cl. D9-415.000.
Kelley, Craig B., 266,732, Cl. D7-93.000.

Sexton, Jack D. Clay pigeon launcher. 266,784, 11-2-82, Cl. D22-99.000.

Staton, Jerry W. Chair. 266,717, 11-2-82, Cl. D6-75.000.

Stephens, William I., to Knoll International, Inc. Chair base or similar article. 266,722, 11-2-82, Cl. D6-196.000.

Stock, Hugh J., to Pacer Technology and Resources, Inc. Container for dispensing adhesives or the like. 266,740, 11-2-82, Cl. D9-370.000.

Stratman, Urban F., to United States of America, Army. Extended range folding leaf sight. 266,783, 11-2-82, Cl. D22-8.000.

Sun, George C. Disc-shaped ornament. 266,749, 11-2-82, Cl. D11-121.000.

Superior Sound, Inc.: *See*—
Jabara, Brock M., 266,759, Cl. D14-33.000.

Suzuki, Yoshikazu, to Ushio Denki Kabushiki Kaisha. Automobile auxiliary light. 266,791, 11-2-82, Cl. D26-28.000.

Syroco, Inc.: *See*—
Peabody, Lawrence; Schriever, Theodore W.; and Wenczl, Stephen K., 266,718, Cl. D6-91.000.

Takahashi, Yoshitake: *See*—
Zaima, Hiroshi; and Takahashi, Yoshitake, 266,755, Cl. D12-91.000.

Tandy Corporation: *See*—
Grae, Bernard A., 266,763, Cl. D14-64.000.

Taylor, Terry L. Figurine. 266,754, 11-2-82, Cl. D11-159.000.

Technicare Corporation: *See*—
Johannsen, Thomas M.; Mosley, Raymond P.; and Knoll, James P., 266,758, Cl. D13-12.000.

Thomas, Wesley L. Telephone. 266,761, 11-2-82, Cl. D14-53.000.

Thompson, Bruce R., to UPL Group Limited. Spout. 266,785, 11-2-82, Cl. D23-32.000.

Tiffany, Harry R., III, to Robert Tiffany Designs, Inc. Convertible sofa. 266,715, 11-2-82, Cl. D6-63.000.

Topete, Lino Z. Swimming pool and spa combination. 266,789, 11-2-82, Cl. D24-38.000.

Trussler, Peter D. H.; and Bushnell, Roger J., to Northern Telecom Limited. Equipment housing. 266,760, 11-2-82, Cl. D14-100.000.

United States of America
Army: *See*—
Stratman, Urban F., 266,783, Cl. D22-8.000.

University of Michigan, The Regents of the: *See*—
Gooding, Elwyn R., 266,711, Cl. D2-231.000.

UPL Group Limited: *See*—
Thompson, Bruce R., 266,785, Cl. D23-32.000.

Ushio Denki Kabushiki Kaisha: *See*—
Suzuki, Yoshikazu, 266,791, Cl. D26-28.000.

Vandoni, Umberto. Pendant. 266,748, 11-2-82, Cl. D11-61.000.

Van Valkenburgh, Norman L. Illuminated headband for visor type headgear or the like. 266,712, 11-2-82, Cl. D2-241.000.

Warner, Joyce E.: *See*—
DuBois, Gayle K.; and Warner, Joyce E., 266,788, Cl. D24-38.000.

Welch, Kristin M., to Lane Company, Inc., The. Furniture arm frame or similar article. 266,721, 11-2-82, Cl. D6-192.000.

Wenczl, Stephen K.: *See*—
Peabody, Lawrence; Schriever, Theodore W.; and Wenczl, Stephen K., 266,718, Cl. D6-91.000.

Wihlke, Hans L. Leaf for a photograph album. 266,770, 11-2-82, Cl. D19-33.000.

Wihlke, Hans L. Leaf for a photograph album. 266,771, 11-2-82, Cl. D19-33.000.

Wilson Brothers Insulation, Inc.: *See*—
Wilson, Donald G.; Wilson, Stephen D.; and Wilson, Daniel P., 266,746, Cl. D10-74.000.

Wilson, Daniel P.: *See*—
Wilson, Donald G.; Wilson, Stephen D.; and Wilson, Daniel P., 266,746, Cl. D10-74.000.

Wilson, Donald G.; Wilson, Stephen D.; and Wilson, Daniel P., to Wilson Brothers Insulation, Inc. Combined harness and flexible measuring tape holder for stud finding. 266,746, 11-2-82, Cl. D10-74.000.

Wilson, Stephen D.: *See*—
Wilson, Donald G.; Wilson, Stephen D.; and Wilson, Daniel P., 266,746, Cl. D10-74.000.

Windolph, Joanna W. Lamp fixture. 266,792, 11-2-82, Cl. D26-84.000.

Zaima, Hiroshi; and Takahashi, Yoshitake, to Honda Giken Kogyo Kabushiki Kaisha. Motorcar. 266,755, 11-2-82, Cl. D12-91.000.

Zipursky, Morley: *See*—
Moore, Basil T.; and Zipursky, Morley, 266,720, Cl. D6-192.000.

LIST OF PLANT PATENTEES

Armstrong Nurseries, Inc.: *See*—
Beach, Carroll, 4,913, Cl. 33.000.

Auffet, Johnny W. Apple tree. 4,914, 11-2-82, Cl. 34.000.

Bailey, Dorothy J. S., to San Joaquin Rose Co. Rose plant. 4,910, 11-2-82, Cl. 6.000.

Beach, Carroll, to Armstrong Nurseries, Inc. Seedless fruiting mulberry. 4,913, 11-2-82, Cl. 33.000.

Bennett, Cecilia L. D. Miniature rose plant. 4,911, 11-2-82, Cl. 7.000.

Bountiful Ridge Nurseries, Inc.: *See*—
Wilson, William J., 4,916, Cl. 43.000.

Conrad-Pyle Company, The: *See*—
Meilland, Marie L., 4,912, Cl. 26.000.

Duffett, William E.: *See*—
Meek, Jack M.; and Duffett, William E., 4,921, Cl. 79.000.

Gavello, Louis E. Escallonia plant named 'Escallonia Terri'. 4,918, 11-2-82, Cl. 54.000.

Meek, Jack M.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,921, 11-2-82, Cl. 79.000.

Meilland, Marie L., to Conrad-Pyle Company, The. Rose plant—meitoflapo variety. 4,912, 11-2-82, Cl. 26.000.

San Joaquin Rose Co.: *See*—
Bailey, Dorothy J. S., 4,910, Cl. 6.000.

Siri, Angelo J. Miniature carnation. 4,920, 11-2-82, Cl. 70.000.

Superior Farming Company: *See*—
Weinberger, John H., 4,915, Cl. 41.000.
Turner, Ted L., Sr. Variegated Pittosporum plant. 4,919, 11-2-82, Cl. 54.000.
Weinberger, John H., to Superior Farming Company. Nectarine tree. 4,915, 11-2-82, Cl. 41.000.
Wilson, William J., to Bountiful Ridge Nurseries, Inc. Peach tree. 4,916, 11-2-82, Cl. 43.000.
Yoder Brothers, Inc.: *See*—
Meek, Jack M.; and Duffett, William E., 4,921, Cl. 79.000.
Zaiger, Chris F. Peach tree. 4,917, 11-2-82, Cl. 43.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 2ND DAY OF NOVEMBER, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Toth, David G. Process for manufacturing a self-aligning antifriction bearing and race therefor. T102,401, 11-2-82, Cl. 29-148.40R.
Young, David J. Method of recovering a photographic addendum from a dispersion thereof. T102,402, 11-2-82, Cl. 430-449.000.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 2, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2.5	4,356,569
16	4,356,570

CLASS 3

1	4,356,571
1.9	4,356,572
36	4,356,573

CLASS 4

192	4,356,574
559	4,356,575
661	4,356,576

CLASS 5

62	4,356,577
66	4,356,578
431	4,356,579

CLASS 8

406	4,357,141

CLASS 14

75	4,356,581

CLASS 15

1.7	4,356,582
21 E	4,356,583
98	4,356,584
111	4,356,585
119 A	4,356,586
199	4,356,587
257.06	4,356,588
320	4,356,589
321	4,356,590
326	4,356,591

CLASS 16

125	4,356,592
251	4,356,593
256	4,356,594

CLASS 17

45	4,356,595
58	4,356,596

CLASS 19

113	4,356,597
114	4,356,598

CLASS 23

230 B	4,357,142
	4,357,144
230 R	4,357,143

CLASS 24

16 PB	4,356,599
30.5 R	4,356,600
297	4,356,601

CLASS 26

84	4,356,602

CLASS 28

255	4,356,603
	4,356,604

CLASS 29

6	4,356,605
25.15	4,356,606
25.42	4,356,607
	4,356,608
48.5 R	4,356,609
157 R	4,356,610
	4,356,611
157.1 R	4,356,612
407	4,356,613
469.5	4,356,614
525	4,356,615
526 A	4,356,616
527.4	4,356,617
527.6	4,356,618
566.3	4,356,619
568	4,356,620
	4,356,621
571	4,356,622
	4,356,623
611	4,356,624
622	4,356,625
747	4,356,626
849	4,356,627
878	4,356,628
885	4,356,629

CLASS 30

90.4	4,356,630
154	4,356,631

CLASS 33

18 R	4,356,632
31	4,356,633
169 R	4,356,634
185 R	4,356,635
199 R	4,356,636
296	4,356,637
333	4,356,638
367	4,356,639

CLASS 34

1	4,356,640
46	4,356,641

CLASS 36

44	4,356,642
59 C	4,356,643

CLASS 37

2 R	4,356,644
281	4,356,645

CLASS 40

16.4	4,356,646
152.1	4,356,647
155	4,356,648
159	4,356,649
160	4,356,650
308	4,356,651
530	4,356,652

CLASS 42

50	4,356,653

CLASS 43

9	4,356,654
67	4,356,655
113	4,356,656

CLASS 44

20	4,357,145
56	4,357,146
	4,357,147
62	4,357,148
68	4,357,149

CLASS 46

12	4,356,657
13	4,356,658
22	4,356,659
60	4,356,660
74 C	4,356,662
74 R	4,356,661
118	4,356,663

CLASS 47

65	4,356,664
80	4,356,665

CLASS 49

35	4,356,666
454	4,356,667
506	4,356,668

CLASS 51

101 R	4,356,669
139	4,356,670
325	4,356,671

CLASS 52

36	4,356,672
127.1	4,356,673
242	4,356,674
264	4,356,675
403	4,356,676
489	4,356,677
799	4,356,678

CLASS 53

381 R	4,356,679
412	4,356,680
440	4,356,681
443	4,356,682
492	4,356,683
	4,356,684
588	4,356,685

CLASS 55

6	4,357,150
	4,357,151
257 C	4,357,152

CLASS 56

295	4,356,686
364	4,356,687

CLASS 57

22	4,356,688
102	4,356,689
210	4,356,690
263	4,356,691
	4,356,692

CLASS 60

39.37	4,356,693
562	4,356,694
602	4,356,695
606	4,356,696
682	4,356,697
733	4,356,698

CLASS 62

34	4,357,153
54	4,356,699
55	4,356,700
55.5	4,356,701
62	4,356,702
155	4,356,703
158	4,356,704
229	4,356,705
238.6	4,356,706
381	4,356,707
430	4,356,708
530	4,356,709

CLASS 65

8	4,357,154
10.1	4,357,155
104	4,357,156
164	4,357,157
225	4,357,158

CLASS 66

196	4,356,710

CLASS 68

23.5	4,356,711

CLASS 70

14	4,356,580
69	4,356,712
364 A	4,356,713

CLASS 71

90	4,357,159

CLASS 72

17	4,356,714
38	B1 3,986,378
98	4,356,715
322	4,356,716
342	4,356,717
389	4,356,718
391	4,356,719

CLASS 73

37	4,356,720
40.7	4,356,721
53	4,356,722
54	4,356,723
118	4,356,724
	4,356,725
178 R	4,356,726
243	4,356,727
295	4,356,728
308	4,356,729
517 R	4,356,730
631	4,356,731
862.33	4,356,732
863.11	4,356,733
864.31	4,356,734

CLASS 74

7 A	4,356,735
61	4,356,736
470	4,356,738
501 R	4,356,737
548	4,356,739
560	4,356,740
595	4,356,741
869	4,356,742

CLASS 75

60	4,357,160
153	4,357,161
175 R	4,357,162

CLASS 81

180 R	4,356,743

CLASS 83

24	4,356,744
341	4,356,745
411 A	4,356,746
451	4,356,747
745	4,356,748
765	4,356,749
816	4,356,750

CLASS 84

1.03	4,356,751
	4,356,752
1.04	4,356,753
1.16	4,356,754
343	4,356,755
411 R	4,356,757
418	4,356,756

CLASS 89

41 E	4,356,758

CLASS 91

31	4,356,759
445	4,356,760
490	4,356,761

CLASS 99

533	4,356,762

CLASS 100

48	4,356,763
169	4,356,764

CLASS 101

228	4,356,765
232	4,356,766
295	4,356,767

CLASS 102

275.9	4,356,768
380	4,356,769
384	4,356,770

CLASS 104

7 B	4,356,771
282	4,356,772

CLASS 105

26.1	4,356,773
199 C	4,356,774
218 A	4,356,775
406 R	4,356,776

CLASS 106

18.35	4,357,163
29	4,357,164
38.3	4,357,165
89	4,357,166
97	4,357,167
171	4,357,168
281 R	4,357,169
300	4,357,170

CLASS 108

111	4,356,777

CLASS 110

244	4,356,778
245	4,356,779

CLASS 111

85	4,356,780

CLASS 112

184	4,356,781
197	4,356,782

CLASS 114

230	4,356,783
248	4,356,784
264	4,356,785
280	4,356,786
292	4,356,787
295	4,356,788
365	4,356,789

CLASS 116

216	4,356,790

CLASS 119

14.43	4,356,791
28	4,356,792
51 R	4,356,793

CLASS 122

158	4,356,794
511	4,356,795

CLASS 123

41.31	4,356,796
52 MF	4,356,798
90.65	4,356,799
193 P	4,356,800
337	4,356,801
339	4,356,802
440	4,356,797
492	4,356,803
549	4,356,804
557	4,356,805
570	4,356,806
606	4,356,807
614	4,356,808
632	4,356,809

CLASS 126

41 R	4,356,810
413	4,356,811
418	4,356,812
439	4,356,813
440	4,356,814
443	4,356,815

CLASS 127

5	4,357,171
60	4,357,172

CLASS 128

71	4,356,816
127	4,356,817
138 A	4,356,818
156	4,356,819
204.26	4,356,820
207.14	4,356,821
215	4,356,822
276	4,356,823
350 R	4,356,824
630	4,356,825
	4,356,826
680	4,356,827
754	4,356,828

CLASS 133

8 R	4,356,829

CLASS 134

6	4,357,173
10	4,357,174
	4,357,175
18	4,357,176
21	4,357,177
152	4,356,830

CLASS 135

7	4,356,831

CLASS 136

247	4,357,486

CLASS 137

15	4,356,832
62	4,356,833
89	4,356,834
117	4,356,835
232	4,356,836
238	4,356,837
242	4,356,838
296	4,356,839
487.5	4,356,840
624.18	4,356,841
625.6	4,356,842

CLASS 138

43	4,356,843

CLASS 139

383 A	4,356,844

CLASS 140

93.2	4,356,845
115	4,356,846

CLASS 141

311 R	4,356,847
349	4,356,848

CLASS 144

144 R	4,356,849
209 R	4,356,850
253 G	4,356,851

CLASS 145

61 L	4,356,852

CLASS 148

1.5	4,357,178
	4,357,179
	4,357,180
6.14 R	4,357,181
6.35	4,357,182
181	4,357,183

CLASS 149

2	4,357,184
6	4,357,185

CLASS 150

1	4,356,853
12	4,356,854

CLASS 156

73.1	4,357,186
107	4,357,187
180	4,357,188
230	4,357,189
244.13	4,357,190
244.14	4,357,191
252	4,357,192
286	4,357,193
299	B1 4,270,967
308.6	4,357,194
345	4,357,195
	4,357,196
354	4,357,197
391	4,357,198
428	4,357,199
603	4,357,200
	4,357,201
635	4,357,202
643	4,357,203
645	4,357,204
656	4,357,205

CLASS 159

13 A	4,357,206
47 WL	4,357,207

CLASS 160

178 R	4,356,855
209	4,356,856
229 B	4,356,857

CLASS 162

23	4,357,208

CLASS 164

154	4,356,858
244	4,356,859
451	4,356,860
462	4,356,861
491	4,356,862

CLASS 165

1	4,356,863
80 B	4,356,864

CLASS 166

153	4,356,865
261	4,356,866
373	4,356,867

CLASS 169

26	4,356,868
49	4,356,869
65	4,356,870

CLASS 173

8	4,356,871

CLASS 174

73 R	4,357,487

CLASS 175

58	4,356,872
410	4,356,873

CLASS 177

210 FP	4,356,874

CLASS 179

1 AT	4,357,492
1 E	4,357,490
1 SC	4,357,488

1 SM 4,357,489
1 SP 4,357,491
6.04 4,357,493
16 F 4,357,494
77 4,357,495
84 VF 4,357,496
107 E 4,357,497
115.5 DV 4,357,498
175.1 A 4,357,499
184 4,357,500

CLASS 180

13 4,356,875
210 4,356,876
227 4,356,877
235 4,356,878
247 4,356,879

CLASS 181

30 4,356,880
150 4,356,881
151 4,356,882
176 4,356,883
200 4,356,884
227 4,356,885
250 4,356,886

CLASS 182

63 4,356,887
194 4,356,888

CLASS 184

6.12 4,356,889

CLASS 187

6 4,356,890
9 E 4,356,891
4,356,893
9 R 4,356,892
4,356,894
17 4,356,895
29 R 4,356,896

CLASS 188

1.11 4,356,897
280 4,356,898

CLASS 190

44 4,356,899

CLASS 191

83 4,357,501

CLASS 192

0.02 R 4,356,900
70.2 4,356,901

CLASS 193

35 R 4,356,902

CLASS 194

1 R 4,356,903

CLASS 198

345 4,356,904
366 4,356,905
413 4,356,906
427 4,356,907
461 4,356,908
472 4,356,909
660 4,356,910
766 4,356,911
790 4,356,912

CLASS 200

1 V 4,357,502
48 A 4,357,503
48 KB 4,357,505
48 R 4,357,504
52 R 4,357,506
61.27 4,357,507
148 H 4,357,508
240 4,357,509
283 4,357,510
314 4,357,511

CLASS 202

85 4,357,210
111 4,357,211
170 4,357,212

CLASS 203

89 4,357,213
100 4,357,214

CLASS 204

2.1 4,357,215
5 4,357,216
84 4,357,217
98 4,357,218
159.15 4,357,219
180 R 4,357,220
181 F 4,357,222
181 R 4,357,221
195 S 4,357,223
255 4,357,224
281 4,357,225
286 4,357,226
290 R 4,357,227

CLASS 206

3 4,356,913
150 4,356,914
315 B 4,356,915
372 4,356,916
444 4,356,918
470 4,356,919

CLASS 208

8 R 4,357,228
10 4,357,229
11 LE 4,357,230
11 R 4,357,231
87 4,357,232
109 4,357,233

CLASS 209

127 B 4,357,234
155 4,357,235
513 4,356,920
576 4,356,921

CLASS 210

167 4,357,236
222 4,357,237
232 4,357,238
321.3 4,357,239
455 4,357,240
708 4,357,241
712 4,357,242
752 4,357,243
801 4,357,244

CLASS 211

13 4,356,922
49 D 4,356,923

CLASS 215

237 4,356,924

CLASS 219

8.5 4,357,512
10.55 B 4,357,513
56.1 4,357,514
60.2 4,357,515
69 M 4,357,516
121 ES 4,357,517
130.1 4,357,518
256 4,357,519
330 4,357,520
375 4,357,521
400 4,357,522
464 4,357,523
501 4,357,524
511 4,357,525
544 4,357,526

CLASS 220

1.5 4,356,925
67 4,356,926
90.2 4,356,927
263 4,356,928
270 4,356,929
306 4,356,930
323 4,356,931
329 4,356,932
401 4,356,933

CLASS 221

96 4,356,934

CLASS 222

1 4,356,935
5 4,356,936
129.2 4,356,937
327 4,356,938
541 4,356,939
596 4,356,940
632 4,356,941

CLASS 224

211 4,356,942
222 4,356,943

CLASS 225

5 4,356,944

CLASS 226

6 4,356,945
117 4,356,946

CLASS 227

5 4,356,947
48 4,356,948
76 4,356,949

CLASS 229

11 4,356,950
17 R 4,356,951
34 R 4,356,952
4,356,953
65 4,356,954
75 4,356,955

CLASS 232

24 4,356,956

CLASS 233

26 4,356,957
27 4,356,958
4,356,959
46 4,356,960

CLASS 235

92 DM 4,357,527
92 SB 4,357,528
380 4,357,529
384 4,357,530
400 4,357,531
483 4,357,532

CLASS 236

1 EA 4,356,961
11 4,356,962
49 4,356,963
58 4,356,964

CLASS 237

12.3 A 4,356,966
12.3 B 4,356,965
14 4,356,967

CLASS 238

1 4,356,968

CLASS 239

6 4,356,969
8 4,356,970
84 4,356,971
177 4,356,972
265.31 4,356,973
382 4,356,974
419.5 4,356,975
533.12 4,356,978
533.5 4,356,976
533.9 4,356,977
585 4,356,979
4,356,980

CLASS 241

16 4,356,981
17 4,356,982

CLASS 242

75.4 4,356,983

CLASS 244

1 TD 4,356,984
103 R 4,356,985

CLASS 248

57 4,356,986
73 4,356,987
129 4,356,988
206 R 4,356,989
396 4,356,990
463 4,356,991
578 4,356,992

CLASS 249

27 4,356,993
109 4,356,994
112 4,356,995

CLASS 250

204 4,357,533
339 4,357,534
397 4,357,53(
491.1 4,357,540
507.1 4,357,541

CLASS 251

82 4,356,996
214 4,356,997
354 4,356,998

CLASS 252

8.5 C 4,357,245
8.55 B 4,357,248
8.6 4,357,246
8.8 4,357,247
12 4,357,249
51.5 A 4,357,250
62.57 4,357,251
78.3 4,357,252
174.11 4,357,253
181 4,357,254
182 4,357,255
188.24 4,357,256
308 4,357,257
312 4,357,258
316 4,357,259
363.5 4,357,260
385 4,357,261
425.3 4,357,262
439 4,357,263
455 Z 4,357,264
4,357,265
512 4,357,266

CLASS 256

26 4,356,999
51 4,357,000
4,357,001

CLASS 260

112 R 4,357,272
112.5 R 4,357,273
123.7 4,357,274
239.3 B Re.31,071
245.4 4,357,275
319.1 4,357,276
326.25 4,357,277
397.45 4,357,278
4,357,279
465 R 4,357,280
512 C 4,357,281
544 F 4,357,282

CLASS 261

23 A 4,357,283
121 R 4,357,284
145 4,357,285

CLASS 264

1.2 4,357,286
39 4,357,287
40.6 4,357,288
42 4,357,289
147 4,357,290
176 R 4,357,291
257 4,357,292
275 4,357,293
294 4,357,294
341 4,357,295
532 4,357,296

CLASS 266

56 4,357,002
158 4,357,003
225 4,357,004

CLASS 267

144 4,357,005

CLASS 269

21 4,357,006

CLASS 271

96 4,357,007
315 4,357,008

CLASS 272

96 4,357,009
117 4,357,010
118 4,357,011

CLASS 273

73 C 4,357,013
73 L 4,357,012
85 G 4,357,014
142 E 4,357,015
156 4,357,016
246 4,357,017
261 4,357,018
411 4,357,019
424 4,357,020

CLASS 277

1 4,357,021
4,357,022
4,357,023
4,357,024
26 4,357,025
153 4,357,026

CLASS 280

5 A 4,357,027
11.28 4,357,028
47.19 4,357,029
154.5 R 4,357,030
461 A 4,357,031
681 4,357,032
703 4,357,033
751 4,357,034
804 4,357,035
809 4,357,036

CLASS 285

314 4,357,037

CLASS 290

44 4,357,542
53 4,357,543

CLASS 292

270 4,357,038
341.12 4,357,039

CLASS 293

102 4,357,040
136 4,357,041

CLASS 294

31.2 4,357,042
59 4,357,043
137 4,357,044

CLASS 296

1 S 4,357,045
37.16 4,357,046
181 4,357,047
183 4,357,048

CLASS 297

75 4,357,049
367 4,357,050

CLASS 299

2 4,357,051
42 4,357,052

CLASS 301

37 R 4,357,053

CLASS 303

10 4,357,054
52 4,357,055

CLASS 307

34 4,357,544
64 4,357,545
225 R 4,357,546
272 A 4,357,547
475 4,357,548
523 4,357,549

CLASS 308

6 C 4,357,056
26 4,357,057
233 4,357,058

CLASS 310

43 4,357,550
46 4,357,551
90 4,357,552
313 B 4,357,553
367 4,357,554

CLASS 312

321 4,357,059
351 4,357,060

CLASS 313

440 4,357,556
509 4,357,557

CLASS 315

83 4,357,558
248 4,357,559

CLASS 318

7 4,357,560
50 4,357,561
135 4,357,562
254 4,357,563
280 4,357,564
473 4,357,565
636 4,357,566
687 4,357,567
695 4,357,568
721 4,357,569

CLASS 323

210 4,357,570
281 4,357,571
286 4,357,572

CLASS 324

54 4,357,573
73 R 4,357,574
158 F 4,357,575
450 4,357,576

CLASS 330

51 4,357,577
124R B1 4,081,757
252 4,357,578
297 4,357,579

CLASS 331

1 R 4,357,580
66 4,357,581
96 4,357,582

CLASS 333

17 L 4,357,583
195 4,357,584

CLASS 335

205 4,357,585
211 4,357,586

CLASS 336

212 4,357,587

CLASS 337

160 4,357,588
315 4,357,589

CLASS 338

23 4,357,590
162 4,357,591
198 4,357,592

CLASS 339

17 C 4,357,061
18 R 4,357,062
75 P 4,357,063
89 R 4,357,064
97 R 4,357,065
176 MP 4,357,066
177 R 4,357,067
266 R 4,357,068
275 R 4,357,069
278 T 4,357,070

CLASS 340

23 4,357,593
72 4,357,594
81 R 4,357,595
146.3 E 4,357,597
146.3 Z 4,357,596
310 A 4,357,598
347 AD 4,357,599
347 NT 4,357,600
506 4,357,601
539 4,357,602
627 4,357,603
731 4,357,604
825.14 4,357,605
870.01 4,357,606

CLASS 343

5 SW 4,357,608
5 VQ 4,357,607
12 A 4,357,610
12 R 4,357,609
18 C 4,357,611
786 4,357,612

CLASS 346

75 4,357,613
4,357,614
134 4,357,615
135.1 4,357,616
140 R 4,357,617
159 4,357,618
160 4,357,619

CLASS 350

6.8 4,357,071
96.20 4,357,072
140 4,357,073
259 4,357,074
294 4,357,075
307 4,357,076
310 4,357,077
350 R 4,357,078

CLASS 351

7 4,357,079
86 4,357,080

CLASS 352

69 4,357,081
78 R 4,357,082

CLASS 354

22 4,357,083
24 4,357,084
25 4,357,085
4,357,086
33 4,357,087
62 4,357,088
286 4,357,089
4,357,090
304 4,357,091

CLASS 355

3 DD 4,357,103
3 FU 4,357,094
3 P 4,357,096
3 R 4,357,093
4,357,095
3 TR 4,357,092
15 4,357,097
4,357,098
46 4,357,099
62 4,357,100
75 4,357,101
77 4,357,102

CLASS 356

4 4,357,104
40 4,357,105
44 4,357,106
147 4,357,107
376 4,357,108

CLASS 357

16 4,357,620
23 B1 4,119,995
39 4,357,621
44 4,357,622

CLASS 358

18 4,357,623
22 4,357,624
75 4,357,625
153 4,357,629
154 4,357,630
167 4,357,631
193.1 4,357,632
299 4,357,633
317 4,357,628
335 4,357,626
348 4,357,627

CLASS 360

40 4,357,634
51 4,357,635
62 4,357,636
65 4,357,637
72.2 4,357,638
85 4,357,639
119 4,357,640
130.23 4,357,641
132 4,357,642
137 4,357,643

CLASS 361

76 4,357,644
93 4,357,645
288 4,357,646
400 4,357,647

CLASS 362

183 4,357,648
217 4,357,649
234 4,357,650
275 4,357,651
276 4,357,652
388 4,357,653

CLASS 363

21 4,357,654
42 4,357,655

CLASS 364

200 4,357,656
4,357,657
4,357,658
412 4,357,659
422 4,357,660
430 4,357,661
431.08 4,357,662
433 4,357,663
474 4,357,664
492 4,357,665
4,357,666
496 4,357,667
497 4,357,668
500 4,357,669
510 4,357,670
518 4,357,671
561 4,357,672
582 4,357,673
768 4,357,674
786 4,357,675
822 4,357,676
826 4,357,677
900 4,357,678
4,357,679
4,357,680
4,357,681

CLASS 365

16 4,357,682
36 4,357,683
4,357,684
189 4,357,685
222 4,357,686
230 4,357,687

CLASS 366

55 4,357,109
132 4,357,110
145 4,357,111
279 4,357,112

CLASS 367

4 4,357,688
8.7 4,357,690
23 4,357,689

CLASS 368

62 4,357,691
75 4,357,692
134 Re.31,073
187 4,357,693
282 4,357,694
322 4,357,695

CLASS 369

45 4,357,696
72 4,357,697
77 4,357,698
173 4,357,699

CLASS 370

83 4,357,700
100 4,357,701

CLASS 371

1 4,357,702
15 4,357,703

CLASS 372

72 4,357,704
109 4,357,705

CLASS 373

95 4,357,485
104 4,357,706

CLASS 374

4 4,357,113
176 4,357,114

CLASS 375

119 4,357,707

CLASS 376

290 4,357,297
391 4,357,209
441 4,357,298

CLASS 378

25 4,357,708
57 4,357,535
103 4,357,537
135 4,357,555
170 4,357,539
175 4,357,538

CLASS 400

110 4,357,115
184 4,357,116

CLASS 401

68 4,357,117

CLASS 403

172 4,357,118
231 4,357,119

CLASS 404

83 4,357,120

CLASS 405

100 4,357,121

CLASS 407

42 4,357,122
110 4,357,123

CLASS 408

130 4,357,124

CLASS 410

44 4,357,125

CLASS 414

46 4,357,126
99 4,357,127
156 4,357,128
346 4,357,129

CLASS 416

197 A 4,357,130

CLASS 417

12 4,357,131

CLASS 418

55 4,357,132
61 B 4,357,133

CLASS 420

487 4,357,299

CLASS 422

62 4,357,300
64 4,357,301
99 4,357,302
159 4,357,303
191 4,357,304
241 4,357,305
254 4,357,306

CLASS 423

3 4,357,307
210.5 4,357,308
486 4,357,309

CLASS 424

1 4,357,310
12 4,357,311
15 4,357,312
49 4,357,313
4,357,314
4,357,315
4,357,316
52 4,357,317
4,357,318
84 4,357,319
89 4,357,320
101 4,357,321
177 4,357,322
180 4,357,323
4,357,324
4,357,325
4,357,326
200 4,357,327
4,357,328
212 4,357,329
232 4,357,330
246 4,357,331
250 4,357,332
258 4,357,333
262 4,357,334
263 4,357,335
4,357,336
267 4,357,337
269 4,357,338
273 P 4,357,339
273 R 4,357,340
4,357,341
274 4,357,342
4,357,343
282 4,357,344
285 4,357,345
298 4,357,346
4,357,347
300 4,357,348
302 4,357,349
304 4,357,350
326 4,357,351
330 4,357,352
365 4,357,353

CLASS 426

3 4,357,354
4 4,357,355
19 4,357,356
36 4,357,357
62 4,357,358
103 4,357,359
538 4,357,360
597 4,357,361
643 4,357,362

CLASS 427

2 4,357,363
43.1 4,357,364
52 4,357,365
54.1 4,357,366
64 4,357,367
74 4,357,368
90 4,357,369
211 4,357,370
238 4,357,371
345 4,357,372
358 4,357,373

CLASS 428

1 4,357,374
11 4,357,375
35 4,357,376
40 4,357,377
64 4,357,378
113 4,357,379
138 4,357,380
174 4,357,381
212 4,357,382
213 4,357,383
215 4,357,384
229 4,357,385
234 4,357,386
246 4,357,387
331 4,357,388
373 4,357,389
398 4,357,390
413 4,357,391
522 4,357,392
547 4,357,393
595 4,357,394
607 4,357,395
626 4,357,396
654 4,357,397

CLASS 429

94 4,357,398
104 4,357,399
111 4,357,400
192 4,357,401
206 4,357,402

CLASS 430

18 4,357,403
49 4,357,404
58 4,357,405
99 Re.31,072
137 4,357,406
204 4,357,407
207 4,357,408
4,357,409
223 4,357,410
4,357,411
4,357,412
253 4,357,413
275 4,357,414
293 4,357,415
302 4,357,416
323 4,357,417
539 4,357,418
564 4,357,419

CLASS 431

9 4,357,134

CLASS 432

11 4,357,135

CLASS 433

224 4,357,136

CLASS 434

201 Re.31,070

CLASS 435

8 4,357,420
68 4,357,421
4,357,422
101 4,357,423
162 4,357,424
191 4,357,425

CLASS 455

20 4,357,709
76 4,357,710
89 4,357,711
161 4,357,712
609 4,357,713

CLASS 464

75 4,357,137

CLASS 493

159 4,357,138
204 4,357,139
307 4,357,140

CLASS 501

135 4,357,426
153 4,357,427

CLASS 521

65 4,357,428
100 4,357,429
128 4,357,430

CLASS 523

161 4,357,431
206 4,357,269
212 4,357,271
335 4,357,270
351 4,357,432

CLASS 524

40 4,357,267
139 4,357,433
178 4,357,434
239 4,357,435
285 4,357,268
448 4,357,436
458 4,357,437
490 4,357,438
493 4,357,439
535 4,357,440
591 4,357,441
724 4,357,461
745 4,357,442
860 4,357,443

CLASS 525

232 4,357,444
244 4,357,445
281 4,357,446
329.4 4,357,447

CLASS 526

65 4,357,448
74 4,357,449
76 4,357,450
106 4,357,451
139 4,357,452
271 4,357,453

CLASS 527

403 4,357,454

CLASS 528

73 4,357,455
111.5 4,357,456
159 4,357,457
167 4,357,458
205 4,357,459
271 4,357,460
357 4,357,462
366 4,357,463
481 4,357,464

CLASS 536

13.8 4,357,465
4,357,466
56 4,357,467
4,357,468
91 4,357,469

CLASS 544

27 4,357,470

CLASS 546

16 4,357,471

CLASS 549

49 4,357,472

CLASS 556

416 4,357,473
482 4,357,474

CLASS 562

414 4,357,475

CLASS 564

509 4,357,476

CLASS 568

678 4,357,477
816 4,357,478
899 4,357,479
902 4,357,480

CLASS 585

724 4,357,481
4,357,482
740 4,357,483
4,357,484

CLASSIFICATION OF DESIGNS

D2— 231 266,710
266,711
241 266,712
259 266,713
D6— 4 266,714
63 266,715
69 266,716
75 266,717
91 266,718
191 266,719
192 266,720
266,721
196 266,722
D7— 9 266,723
11 266,724
13 266,725
18 266,726
30 266,727
41 266,728
64 266,729
66 266,730
87 266,731
93 266,732
110 266,733
150 266,734
151 266,735
D8— 98 266,736
396 266,737
D9— 307 266,738
349 266,739
370 266,740
401 266,741
415 266,742
416 266,743
D10— 32 266,744
61 266,745
74 266,746
D11— 2 266,747
61 266,748
121 266,749
152 266,750
158 266,751
266,752
266,753
159 266,754
D12— 91 266,755
98 266,756
D13— 8 266,757
12 266,758
D14— 33 266,759
53 266,761
58 266,762
64 266,763
100 266,760
266,764
D15— 21 266,765
127 266,766
D17— 19 266,767
D18— 1 266,768
D19— 33 266,770
266,771
51 266,769
92 266,772
D20— 1 266,773
41 266,774
D21— 13 266,775
134 266,776
266,777
136 266,778
137 266,779
171 266,780
227 266,781
234 266,782
D22— 8 266,783
99 266,784
D23— 32 266,785
155 266,786
D24— 10 266,787
38 266,788
266,789
53 266,790
D26— 28 266,791
84 266,792
D30— 13 266,793
D32— 1 266,794

CLASSIFICATION OF PLANTS

P.— 6 4,910
7 4,911
26 4,912
33 4,913
34 4,914
41 4,915
43 4,916
4,917
54 4,918
4,919
70 4,920
79 4,921

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

29— 148.4 R T102,401
430— 449 T102,402

GEOGRAPHICAL INDEX

OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,356,720		4,356,984		4,357,611		4,356,698		4,357,181	24 :	4,356,666
	4,356,721		4,356,992		4,357,618		4,356,724		4,357,194		4,356,686
	4,357,334		4,357,011		4,357,620		4,356,783		4,357,236		4,356,822
02 :	4,356,636		4,357,013		4,357,624		4,356,785		4,357,243		4,356,831
04 :	4,356,581		4,357,017		4,357,627		4,356,787		4,357,259		4,356,958
	4,356,605		4,357,035		4,357,634		4,356,900		4,357,293		4,357,043
	4,356,671		4,357,061		4,357,648		4,356,943		4,357,343		4,357,137
	4,356,806		4,357,062		4,357,655		4,356,972		4,357,359		4,357,153
	4,356,809		4,357,063		4,357,673		4,357,254		4,357,376		4,357,185
	4,357,547		4,357,082		4,357,676		4,357,286		4,357,382		4,357,265
	4,357,629		4,357,102		4,357,681		4,357,290		4,357,398		4,357,308
05 :	4,357,064		4,357,115		4,357,687		4,357,384		4,357,479		4,357,375
	4,357,113		4,357,118		4,357,705		4,357,515		4,357,493		4,357,549
	4,357,505		4,357,120		4,357,707		4,357,644		4,357,494		4,357,608
06 :	Re.31,070		4,357,142	08 :	4,356,661		4,357,678		4,357,561		4,357,694
	4,356,569		4,357,144		4,356,812	13 :	4,356,727		4,357,595		4,357,700
	4,356,574		4,357,147		4,356,825		4,356,744		4,357,603		4,357,713
	4,356,577		4,357,187		4,356,890		4,356,908		4,357,646	25 :	4,356,593
	4,356,582		4,357,193		4,357,010		4,357,186		4,357,651		4,356,642
	4,356,584		4,357,195		4,357,093		4,357,197		4,357,653		4,356,678
	4,356,590		4,357,198		4,357,388		4,357,284		4,357,701		4,356,701
	4,356,610		4,357,199		4,357,492		4,357,642	18 :	4,356,624		4,356,719
	4,356,616		4,357,214		4,357,594	15 :	4,356,848		4,356,723		4,356,725
	4,356,647		4,357,217		4,357,600		4,357,711		4,356,868		4,356,754
	4,356,655		4,357,228		4,357,637	17 :	4,356,580		4,356,954		4,356,770
	4,356,657		4,357,244	09 :	4,356,861		4,356,586		4,357,025		4,356,779
	4,356,658		4,357,260		4,356,883		4,356,595		4,357,027		4,356,823
	4,356,660		4,357,298		4,356,975		4,356,606		4,357,133		4,356,882
	4,356,696		4,357,299		4,357,094		4,356,631		4,357,140		4,356,950
	4,356,709		4,357,303		4,357,138		4,356,633		4,357,177		4,356,960
	4,356,731		4,357,305		4,357,146		4,356,638		4,357,216		4,356,969
	4,356,748		4,357,321		4,357,166		4,356,646		4,357,237		4,356,991
	4,356,756		4,357,322		4,357,175		4,356,650		4,357,271		4,357,023
	4,356,757		4,357,336		4,357,227		4,356,663		4,357,275		4,357,041
	4,356,788		4,357,344		4,357,269		4,356,675		4,357,325		4,357,057
	4,356,790		4,357,346		4,357,297		4,356,679		4,357,334		4,357,069
	4,356,814		4,357,351		4,357,332		4,356,683		4,357,601		4,357,083
	4,356,816		4,357,364		4,357,354		4,356,684		4,357,628		4,357,088
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	4,356,833		4,357,429		4,357,519		4,356,749		4,357,698		4,357,105
	4,356,834		4,357,443		4,357,637		4,356,755	19 :	4,356,637		4,357,136
	4,356,857		4,357,460		4,357,660		4,356,776		4,356,738		4,357,173
	4,356,869		4,357,463		4,357,668		4,356,777		4,356,934		4,357,183
	4,356,874		4,357,474		4,357,672		4,356,780	20 :	4,356,611		4,357,220
	4,356,885		4,357,486	10 :	4,356,927		4,356,824		4,356,643		4,357,222
	4,356,887		4,357,488		4,357,015		4,356,852		4,356,765		4,357,288
	4,356,918		4,357,490		4,357,235		4,356,898		4,356,836		4,357,295
	4,356,930		4,357,529		4,357,249		4,356,914		4,357,009		4,357,310
	4,356,941		4,357,530		4,357,282		4,356,923		4,357,129		4,357,312
	4,356,944		4,357,532		4,357,314		4,356,924	22 :	4,356,854		4,357,422
	4,356,945		4,357,533	12 :	4,356,570		4,357,000		4,357,229		4,357,525
	4,356,970		4,357,566		4,356,613		4,357,042		4,357,296		4,357,552
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DESIGN PATENTS

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PLANT PATENTS

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48 : 4,919

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